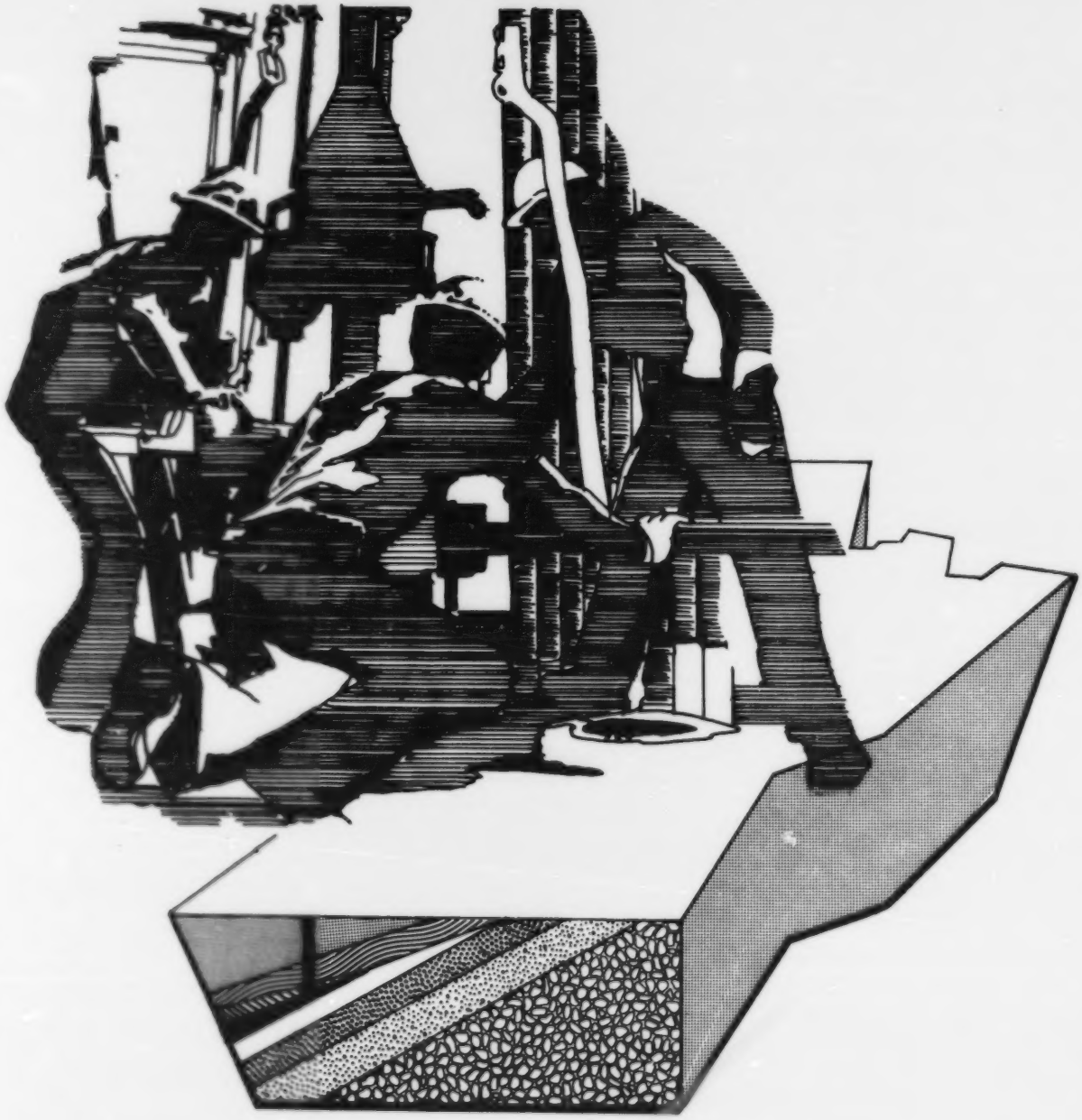
OIL ACTIVITY REVIEW 1987



Manitoba
Energy and Mines
Petroleum

MG-15454

88-03856/

MANITOBA OIL ACTIVITY REVIEW

1987

APRIL 1988

MANITOBA ENERGY AND MINES
PETROLEUM

1987 Highlights

- During 1987, 107 wells were drilled in Manitoba, resulting in a 21% decrease from 1986's total of 135 wells.

- Manitoba's annual oil production decreased for the first time since 1981. Production was down approximately 5 percent over 1986 production to 780 000 m^3 (4.9 million barrels).

- The value of oil increased to approximately $110 million, a 16% increase over 1986, due mainly to a slow but steady recovery in world crude oil prices.

- Provincial revenues collected from the oil industry (royalties, oil taxes, lease sales and lease rentals) increased to $12.3 million during 1987, representing a 3% increase over 1986 ($11.9 million).

- Gross royalties payable to freehold mineral owners were estimated to be $11.9 million in 1987 (Federal and Provincial tax liabilities included).

- Surface rights owners received approximately $4 million from rental payments during 1987.

- Municipal tax assessments on oilfield equipment and pipelines were estimated to be $8.8 million (with taxes paid amounting to approximately $1.8 million).

- Oil industry expenditures in Manitoba were estimated to be $82 million in 1987, a 5% decrease over 1986.

- Thirteen geophysical seismic programs were licensed in 1987, covering 1 008 kilometres at an estimated cost of $2.5 million.

- Two sales of Crown oil leases covering 5 813 hectares generated only $594,635 in revenue to the province in 1987, down 37 percent from 1986's total of $937,763.

- As of December 31, 1987 there were 12 oil fields and 111 non-confidential oil pools designated in the province.

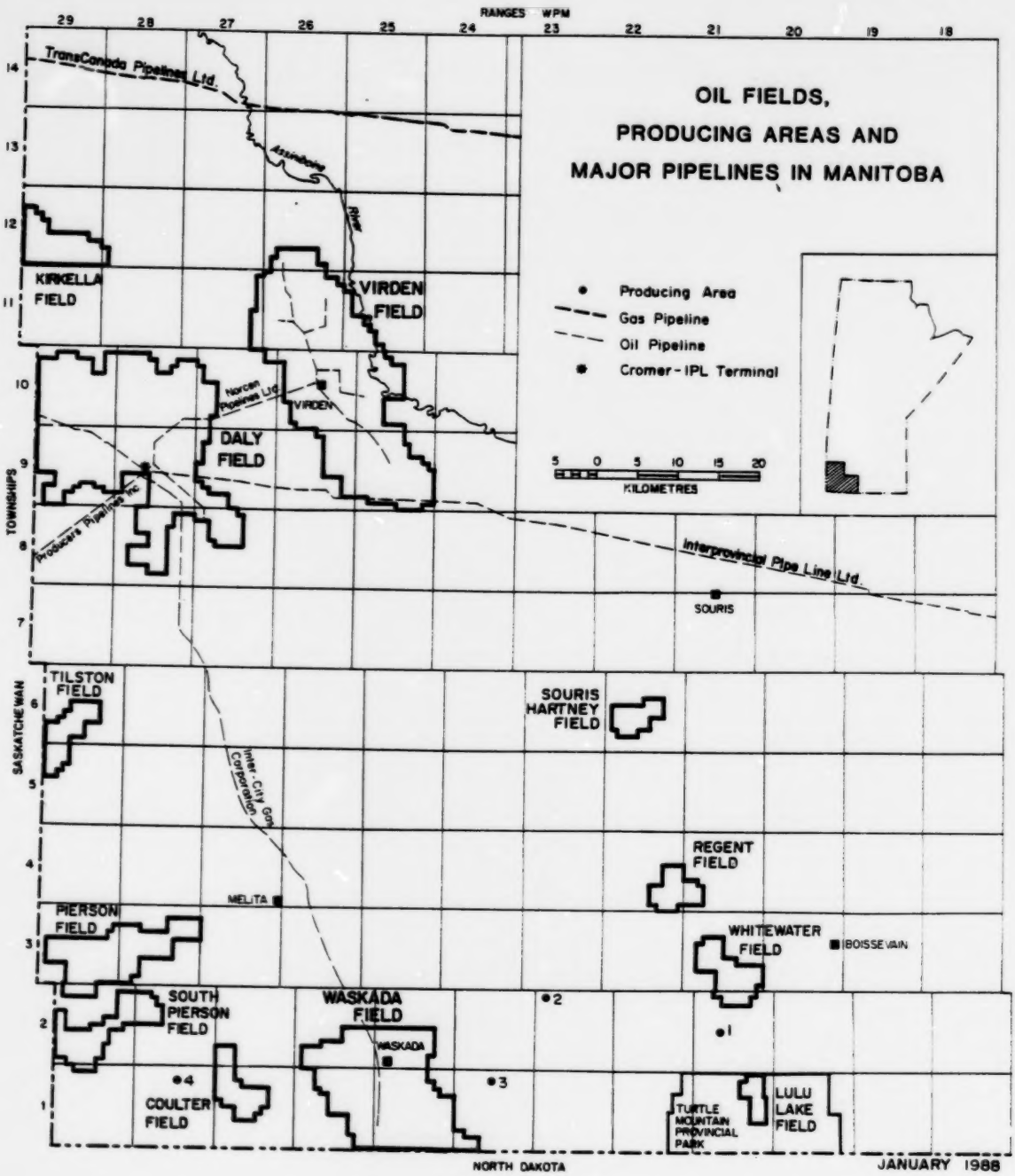
- Three new waterflood pressure maintenance schemes were approved and implemented in portions of the Waskada Field during 1987.

- Crude oil prices narrowly fluctuated throughout the year between $20 - 25/bbl. In January, 1987 the average price of crude oil in Manitoba was $22.25/bbl. By December 1987, the average price of crude closed the year off at 20.80/bbl. In 1987, Manitoba's average crude oil price increased by 20% to $22.70/bbl, compared with 1986's average of $18.90/bbl.

- A new Manitoba Drilling Incentive Program was introduced in 1987 to replace the previous program which expired on December 31, 1986. The new program is designed to provide operators of new wells with a royalty/tax free "holiday volume". Each new well drilled in Manitoba after January 1, 1987 and prior to January 1, 1992 will earn a "holiday volume" of oil up to a maximum of 10 000 m^3 or 5 years of production, whichever occurs first.

- A new Enhanced Oil Recovery Program also introduced in 1987 is designed to maximize oil recovery by encouraging enhanced oil recovery (EOR) projects. Qualifying projects approved after January 1, 1987 and fully implemented prior to January 1, 1992 will be eligible for an incentive period of up to 60 months. During the incentive period, operators will benefit from reduced Crown royalty and tax rates on production from qualifying projects.

- The Federal Government introduced the Canadian Exploration and Development Incentive Program in 1987 (effective April 1, 1987) whereby qualifying operators are eligible to receive incentive payments amounting to 33 1/3 percent of eligible exploration and development expenses. The incentive is limited to a maximum of $10 million of eligible expenses incurred in any 12 month period commencing April 1, 1987. The program was introduced to help companies maintain new exploration and development drilling in the wake of the 1986 crude oil price collapse.



OTHER PRODUCING AREAS

1. Mountainside
2. Deloraine
3. Goodlands
4. Lyleton

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Crown Oil and Natural Gas Lease Sales

Two Crown oil and natural gas lease sales were held in 1987. Fifty seven leases covering 5 813 hectares were sold for a total of $594,635 down 37 percent from 1986's total of $937,763.

In the first lease sale, held on April 8, 1987, the average bonus price paid per hectare was $112.40, whereas in the October 14, 1987 sale, the average bonus price decreased by 18% to $92.35 per hectare. Compared with the two sales held in 1986, the average lease bonus price in 1987 decreased by 12%, from $112.77 to $99.30/hectare.

The highest price in the April sale was $230.23 per hectare paid by Chevron Canada Resources Limited for a half section parcel in the Scarth area approximately 13 km south of Virden. The highest price per hectare in the October sale was paid by Manitoba Oil and Gas Corporation ($202.48 per hectare) for a number of parcels west of Oak Lake.

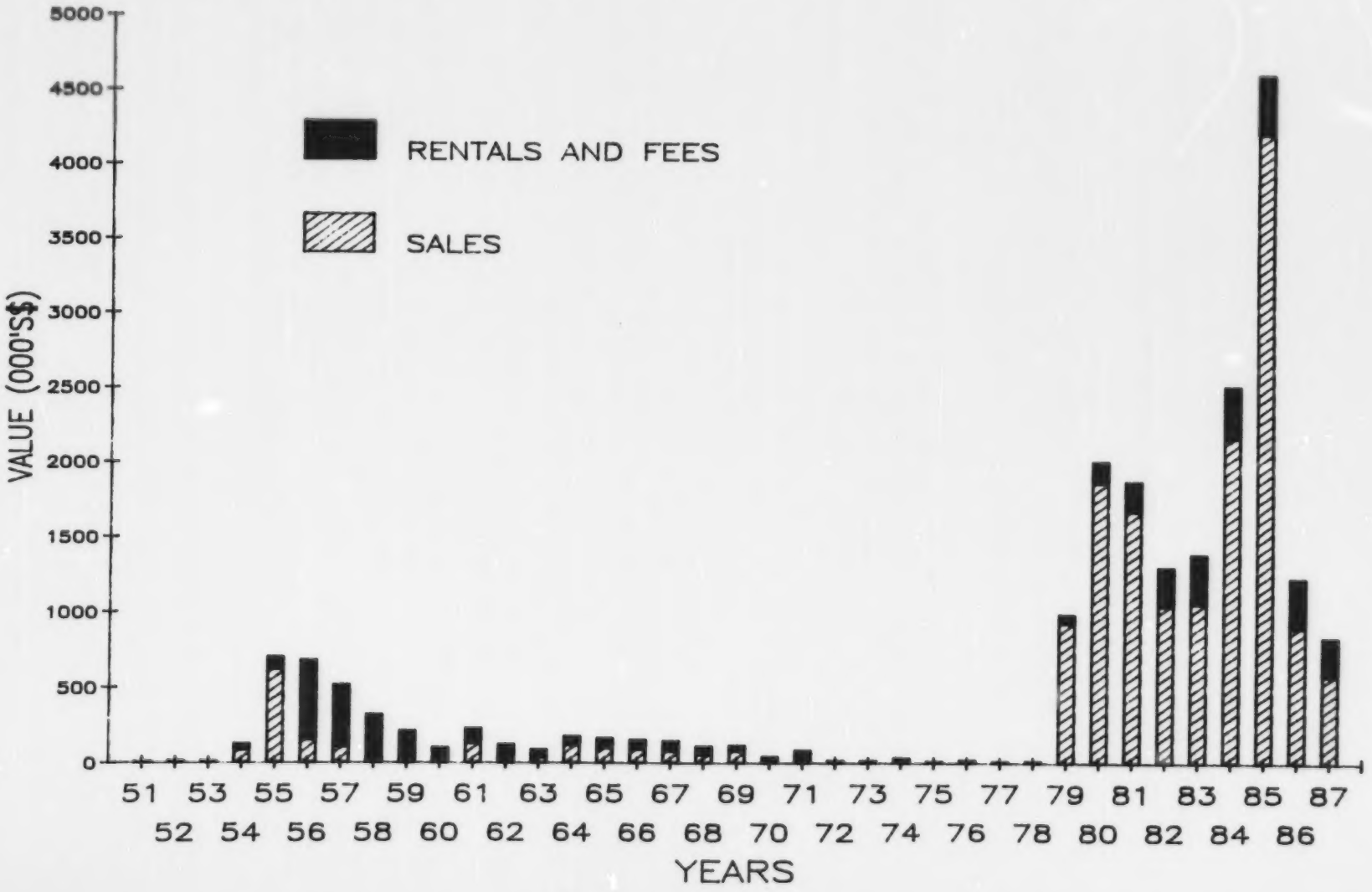
Lease sales in 1987 generated the lowest revenue since lease sales were re-implemented in 1979.

Since Crown oil and gas lease sales resumed in 1979, the province has received $14,819,721 in revenue from the disposition of Crown oil leases and exploration reservations (refer to table for annual sale statistics).

MANITOBA CROWN OIL LEASE AND RESERVATION SALE STATISTICS 1947 - 1987

	LEASE SALES						RESERVATION SALES						
YEAR	NO. OF LEASES SOLD	AREA (ha)	BONUS ($)	AVG. PRICE ($/ha)	HIGHEST PRICE ($/ha)	LEASE REVENUE ($)	NO. OF RES. SOLD	AREA (ha)	BONUS ($)	AVG. PRICE ($/ha)	HIGHEST PRICE ($/ha)	RES. REVENUE ($)	TOTAL REVENUE FROM SALES ($)
1947-53							DATA UNAVAILABLE						
1954	31	4 184	82,814	19.79	37.37	88,291	0	0	0	0	0	0	88,291
1955	140	32 247	579,801	17.98	62.58	620,751	1	8 778	5,854	.67	.67	6,213	626,962
1956	28	4 534	43,902	9.68	79.09	49,682	4	255 016	105,587	.41	1.33	106,587	156,269
1957	16	4 568	100,373	21.97	44.71	106,174	2	48 820	3,256	.07	.08	3,756	109,931
1958	0	0	0	0	0	0	1	10 291	101	.01	.01	351	351
1959	1	777	505	.65	.65	1,475	2	11 478	11,879	1.03	2.42	12,379	13,854
1960	1	65	4,103	63.12	63.12	4,193	0	0	0	0	0	0	4,193
1961	0	0	0	0	0	0	4	50 721	134,099	2.64	6.75	135,099	135,099
1962	2	260	1,327	5.11	12.62	1,668	1	7 464	24,706	3.31	3.31	24,956	26,624
1963	63	5 055	31,614	6.25	17.30	38,468	1	3 498	1,608	.46	.46	1,858	40,326
1964	40	9 467	109,125	28.47	388.06	120,717	1	5 641	778	.14	.14	1,028	121,745
1965	42	4 347	40,235	9.26	77.60	46,024	15	92 717	52,672	.57	12.11	56,422	102,446
1966	31	4 417	24,086	5.45	64.22	29,850	6	38 689	62,886	1.63	2.08	64,636	94,485
1967	10	2 274	23,537	10.35	22.25	26,446	5	49 846	55,013	1.10	3.80	56,263	82,709
1968	19	3 599	22,630	6.29	18.92	27,265	6	46 040	31,426	.68	4.45	32,926	60,191
1969	2	970	7,164	7.39	11.94	8,382	3	16 453	75,282	4.58	7.54	76,032	84,414
1970	8	3 580	10,094	2.82	8.08	14,596	0	0	0	0	0	0	14,596
1971	2	1 230	33,673	27.38	49.75	34,308	0	0	0	0	0	0	34,308
1972-78							NO SALES						
1979	86	11 064	897,885	81.15	315.17	929,885	3	4 736	40,888	8.63	12.23	47,558	977,413
1980	80	12 540	1,057,530	84.33	470.51	1,092,880	8	15 572	820,345	52.68	100.31	841,810	1,934,690
1981	85	12 312	1,074,958	87.31	257.26	1,109,988	5	5 376	611,199	113.69	178.43	619,169	1,729,157
1982	56	6 448	1,055,668	163.72	938.88	1,074,588	0	0	0	0	0	0	1,074,588
1983	66	9 255	1,032,267	111.54	762.34	1,058,705	1	1 024	40,192	39.25	39.25	41,722	1,100,427
1984	104	8 776	2,181,499	248.58	1,411.17	2,208,639	0	0	0	0	0	0	2,208,639
1985	173	15 471	4,215,083	272.45	1,593.78	4,262,410	0	0	0	0	0	0	4,262,410
1986	103	7 904	891,358	112.77	602.00	916,268	1	768	20,285	26.41	26.41	21,495	937,763
1987	57	5 813	577,253	99.30	230.23	594,635	0	0	0	0	0	0	594,635
TOTAL	1,246	171 157	14,098,484	82.37	N/A	14,466,258	70	672 928	2,098,056	3.12	N/A	2,150,260	16,616,518

CROWN LEASE SALES, RENTALS AND FEES
1951 - 1987



Crown Oil and Natural Gas Leases

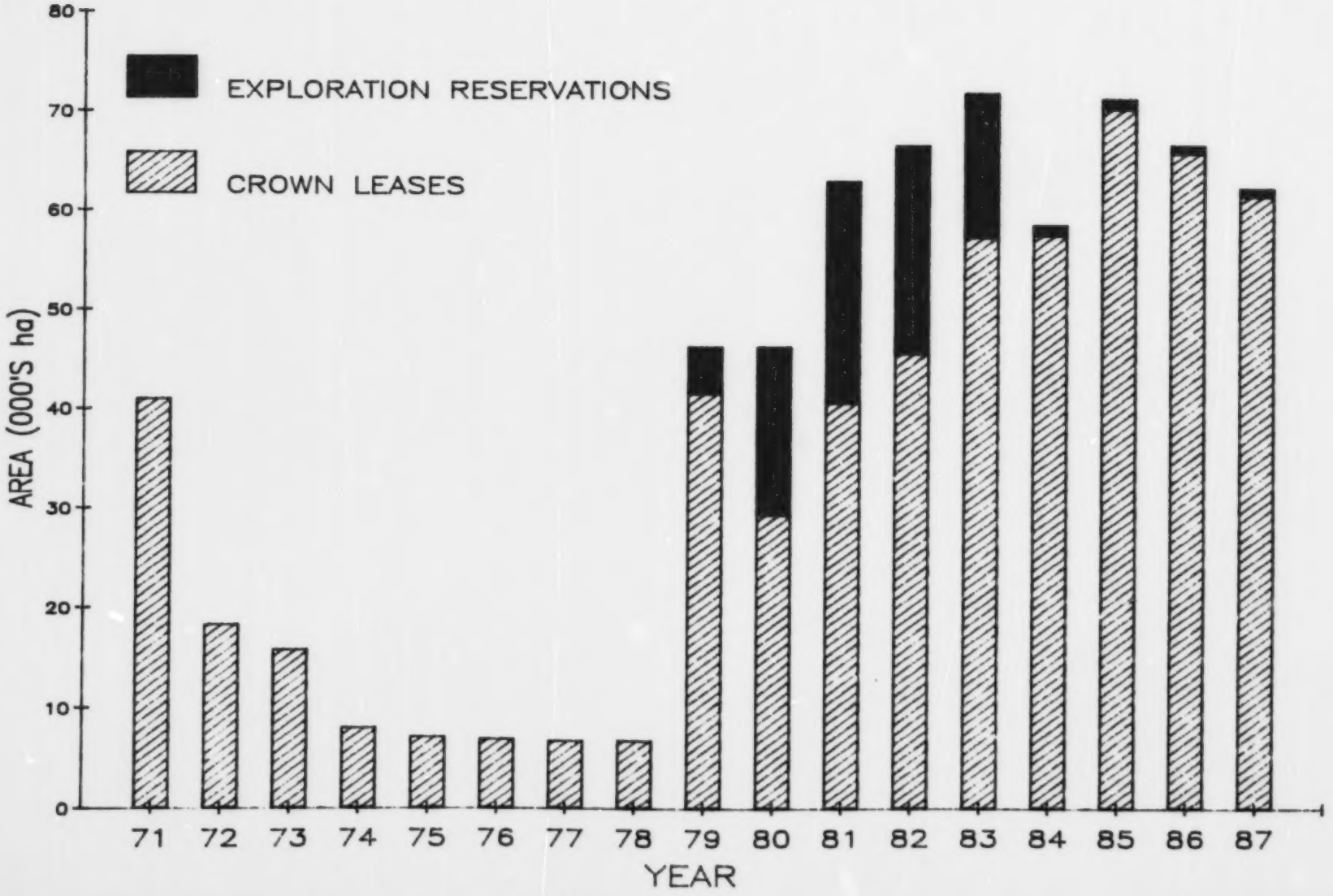
As of December 31, 1987, the total area of Crown oil and natural gas rights under disposition was 62 480 hectares. Of this total, 61 712 hectares were held under lease and 768 hectares were held under exploration reservations. In 1987 the total area under disposition decreased by 6.5 percent compared with 1986.

On December 31, 1982, deeper rights renewal provisions came into effect for pre-1979 leases. Under these provisions, non-productive areas and rights below the producing formation revert to the Crown at the end of the lease term. From January 1, 1983 to December 31, 1987, these regulatory termination provisions resulted in 295 leases covering 39 802 hectares being terminated. These cancelled rights again become available for leasing by other parties interested in actively developing them. A lease may be extended for further periods of one year if a rental penalty is paid and a commitment to a drilling program is made.

Oil and natural gas leases have initial terms of five years. Because eight years have passed since lease sales were resumed in 1979, 1987 was the fourth year that post-1978 lease holders had to surrender non-productive leases or apply for one-year extensions by paying additional rental penalties and committing to drilling programs. As a result, those leases surrendered will again be made available to other interested parties.

In 1987, one lease was extended.

CROWN OIL & GAS RIGHTS UNDER DISPOSITION (DEC. 31ST) 1971-1987



Freehold Mineral Owner's Leasing and Revenue

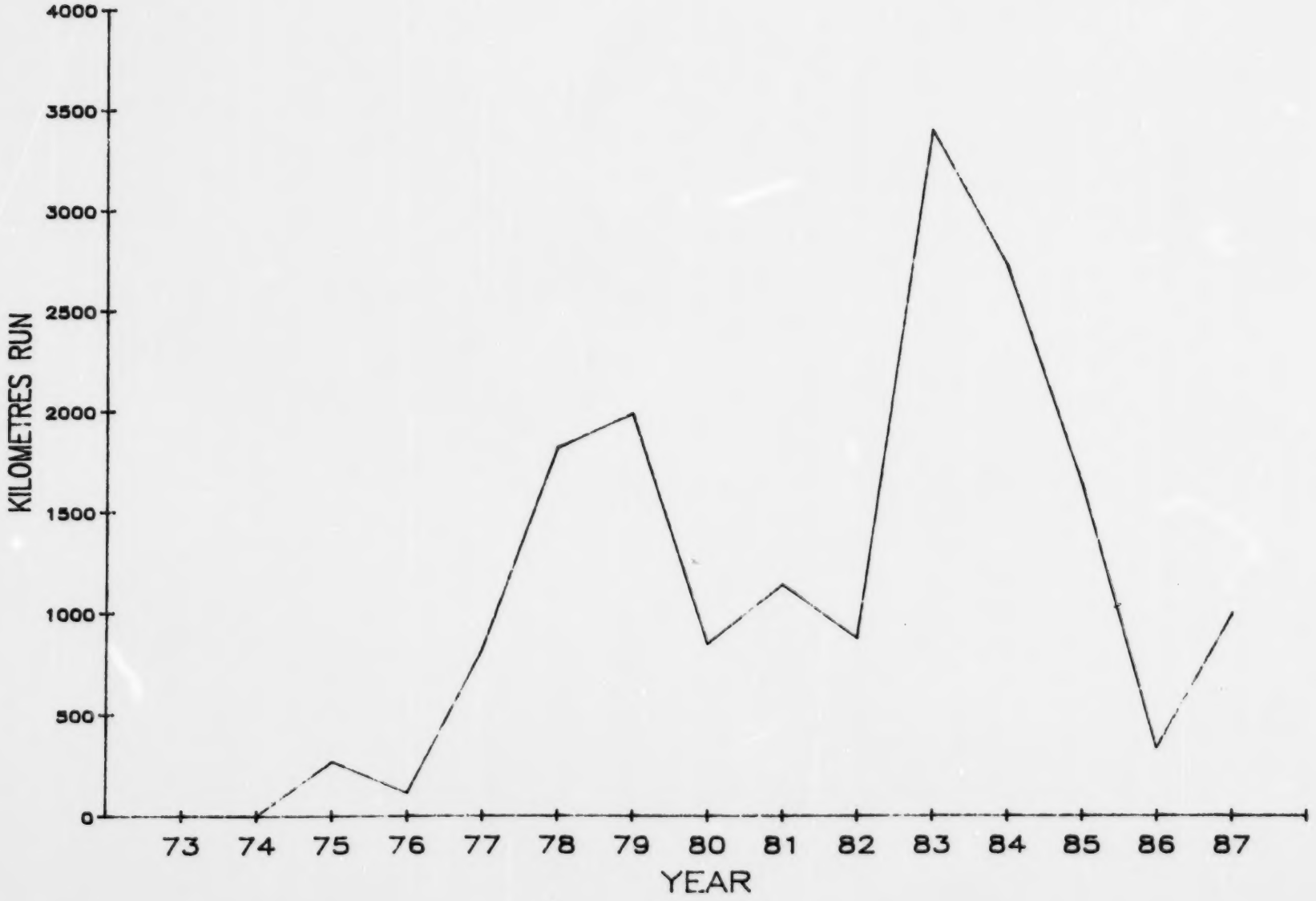
Approximately 80% of the mineral rights in southwestern Manitoba are privately owned (freehold). There is keen competition among companies to negotiate new leases with freehold mineral owners in areas of current interest where leases have expired or where mineral rights are not presently leased. Freehold mineral owners receive revenue from signing bonuses, delay rental payments and oil royalties when production is obtained. Freehold royalties may range from 12 1/2 to 20% of gross production sales value. It is estimated that gross royalties payable to freehold mineral owners in 1987 were $11.9 million (not including signing bonuses and delay rental payments for new and non-producing leases and before payment of provincial and federal taxes).

Geophysical Activity

Thirteen geophysical licenses were issued in 1987. The licensed programs covered approximately 1 008 km, making 1987 a very good year for geophysical exploration activity in the Province compared with 1986. The estimated cost of these programs was $2.50 million.

In 1987, geophysical programs were carried out in the following areas of the province: South McAuley, Elkhorn, Cromer, Pilot Mound, Pierson, Birdtail, Cosgrove, South Pierson, Oak Lake, Virden, Napinka, Broomhill, Lauder, Hartney, Reston, Pipestone, Daly, Russell, Shellmouth and Tilston.

GEOPHYSICAL ACTIVITY 1973-1987



MANITOBA GEOPHYSICAL ACTIVITY SUMMARY

1973-1987

YEAR	LICENSES ISSUED	# OF KILOMETRES RUN (km)	TOTAL PROGRAM COSTS $
1973	0	0	0
1974	0	0	0
1975	1	270	106,500
1976	3	112	118,302
1977	2	830	1,046,220
1978	5	1 828	3,451,370
1979	10	2 001	2,970,734
1980	10	851	1,843,438
1981	11	1 148	2,116,854
1982	19	879	1,805,512
1983	14	3 410	3,639,692
1984	23	2 731	5,547,086
1985	25	1 647	3,081,241
1986	8	338	1,227,227
1987	13	800*	2,500,000*

*Estimate

Summary of 1987 Geophysical Programs

Geophysical License No.	Licensee	Contractor	Km Licensed
273	Chevron Canada Resources Ltd.	Chevron Industries Inc.	315.2
274	Sceptre Resources Ltd.	Format Resources Corp.	18.0
275	Chevron Canada Resources Ltd.	Chevron Industries Inc.	52.0
276	Chevron Canada Rsources Ltd.	Chevron Industries Inc.	12.3
277	Chevron Canada Resources Ltd.	Chevron Industries Inc.	16.0
278	Sceptre Resources Ltd.	Format Resources Corp.	60.4
279	Chevron Canada Resources Ltd.	Chevron Industries Inc.	167.5
280	Chevron Canada Resources Ltd.	Chevron Industries Inc.	180.5
281	Manitoba Oil and Gas Corp.	Pioneer Exploration	54.0
282	Geo-X Systems Ltd.	Geo-X Systems Ltd.	49.5
283	Manitoba Oil and Gas Corp.	Trace Exploration	48.0
284	Manitoba Oil and Gas Corp.	Trace Exploration	13.7
285	Manitoba Oil and Gas Corp.	Trace Exploration	21.3
TOTAL			1008.0

Drilling Activity

Drilling activity in Manitoba was off again for the second year due to the collapse and slow recovery of crude oil prices during 1986 and 1987. In 1987, 116 drilling licenses were issued (equal to 1986) resulting in 17 different oil companies drilling 107 wells (21% lower than 1986). Six drilling contractors using 11 drill rigs drilled 96 970 metres of hole. Of the 107 wells drilled in 1987, 74 were classified as development wells, while the remaining 33 were exploratory.

Despite the drop in drilling activity however, the success rate of wells drilled continued to be very high. Eighty-four percent (90 wells) of the 107 wells drilled were completed as potential oil wells. Ninety-three percent of the 74 development wells drilled and sixty-four percent of the 33 exploratory wells drilled were completed as potential oil wells.

The Daly area continued to draw most of the drilling activity (40%) with 27 development wells and 16 exploratory wells drilled. The Waskada area recorded 29 wells (23% of total drilling activity) while the South Pierson area accounted for 8 wells drilled.

Areas of New Interest

Daly Field (Bakken Play)

At present this play is concentrated in the northwestern part of the Daly Field. The play began in 1985 with the completion of a well located at 13-21-10-29. Currently, there are 22 wells in the Daly Field producing from the Bakken Formation. Bakken oil is of very high quality, light with low sulphur content.

Development of Bakken potential has provided a second exploration objective and in this way has also stimulated development of the overlying Lodgepole Formation.

South Pierson

A significant development has occurred commencing in 1985 in the extreme southwest corner of the province in the South Pierson Field. Substantial reserves have been discovered in the Lower Amaranth Formation (equivalent to the main producing Formation at Waskada). Delineation and development of the pool is continuing.

Regent

Development of a Mississippian Lodgepole pool north of Whitewater Lake has resulted in the designation of a new field, "Regent" in 1987. Six new producing wells were completed in the pool. The pool lies at or near the Lodgepole subcrop edge and is similar to established pools to the north and south. Development is continuing.

1987 Drilling Statistics

No of Wells Drilled by Operator

	1987	1986
Tundra Oil and Gas	22	12
Omega Hydrocarbons Ltd.	18	13
Newscope Resources Ltd.	12	16
Enron Oil Canada Ltd.	11	-
Manitoba Oil and Gas Corp.	10	4
Rideau Petroleums Ltd.	6	13
Canadian Roxy Petroleum	5	5
Chevron Canada Resources Ltd.	5	9
Home Oil Company Ltd.	5	13
International Interlake Ind. Ltd.	5	-
Sceptre Resources Ltd.	2	-
Copperhead Oil Company Ltd.	1	-
Great American Energy Inc.	1	-
Lyleton Corporation	1	-
Pledge Petroleum Ltd.	1	-
Saskatchewan Oil and Gas Corp.	1	2
Voyager Energy Company	1	8
TOTAL	107	N/A

No of Wells Drilled by Contractor

	1987	1986
Red Arrow Drilling Ltd.	35	42
Crown Drilling Ltd.	33	40
Sedco Drilling Ltd.	28	10
Big Sky Drilling Ltd.	4	6
Cam Am Drilling Ltd.	4	21
Atco Drilling Ltd.	3	-
Total	107	N/A

1987 DRILLING ACTIVITY BY AREA

AREA	TWP.	RGE WPM	# Of Wells Drilled	Devel. Drld.	Devel. POW	Explor. Drld.	Explor. POW	Total POW	Dry/ Abd	Other
Daly	8-10	27-29	43	27	25	16	13	38	5	-
Tilston	5 & 6	29	1	-	-	1	-	-	1	-
Waskada	1 & 2	25 & 26	29	27	26	2	2	28	1	-
Coulter	1	27	1	-	-	1	1	1	-	-
Lulu Lake	1	21	-	-	-	-	-	-	-	-
Virden	9-12	25 - 27	5	3	3	2	-	3	2	-
Whitewater	3	21	6	6	5	-	-	5	1	-
Pierson	3	28 & 29	-	-	-	-	-	-	-	-
Kirkella	12	29	1	-	-	1	1	1	-	-
Souris Hartney	6	22	-	-	-	-	-	-	-	-
S. Pierson	2	28 & 29	8	5	5	3	3	8	0	-
Other Areas			13	6	5	7	1	6	7	-
Total			107	74	69	33	21	90	17	-
% of Total Wells Drilled			N/A	69		31		84	16	-
Success Rate (%)			N/A	93		64		84	N/A	N/A

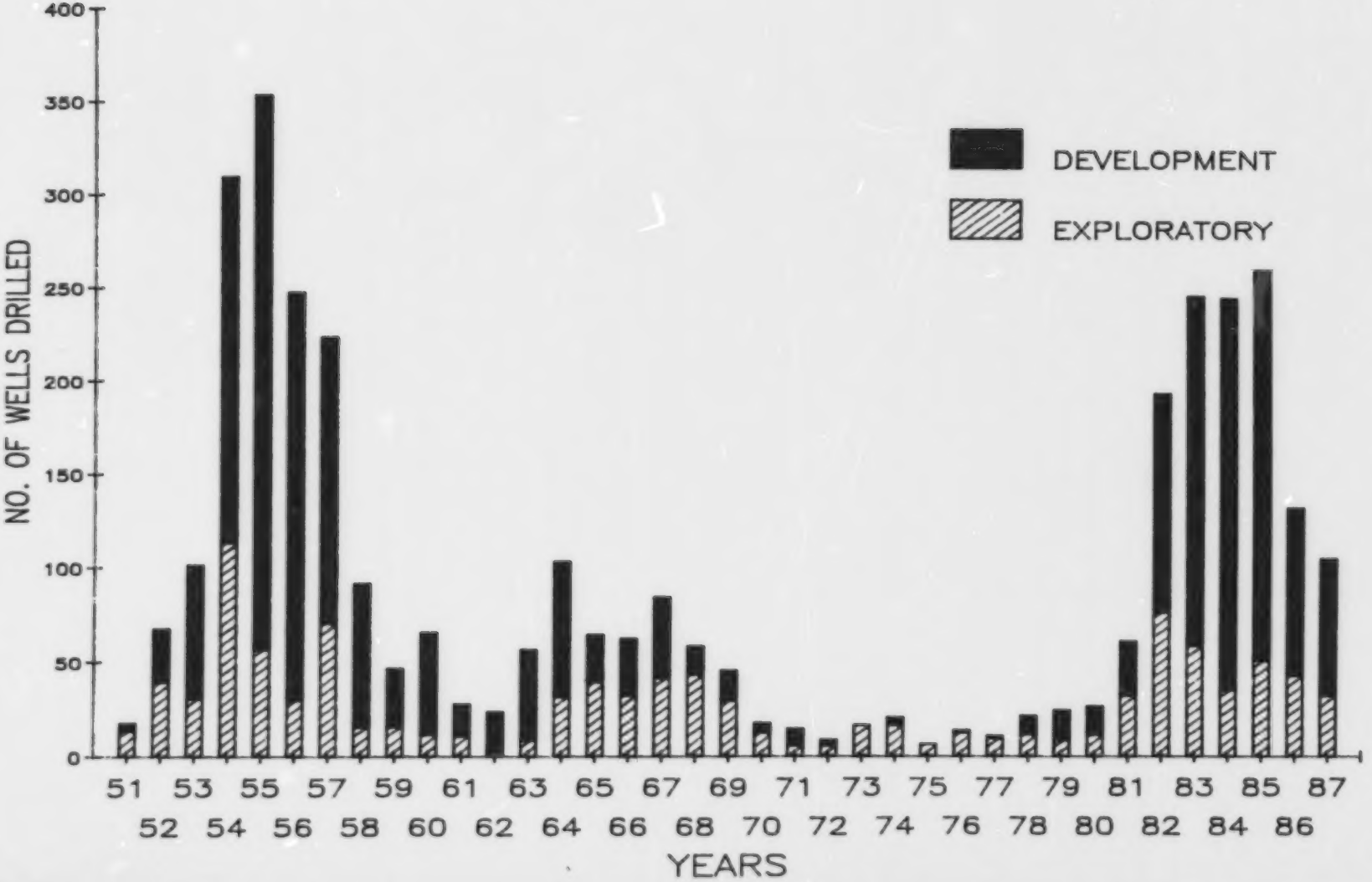
POW = Potential Oil Wells

DRILLING ACTIVITY 1951-1987

YEAR	OIL AND GAS WELLS								OTHER WELLS DRILLED*			
	NO. OF WELLS LICENSED	NO. OF WELLS DRILLED	CLASSIFICATION OF WELLS DRILLED		COMPLETED STATUS			METRES DRILLED	STH	PTH	GSW	Helium
			E	D	POTENTIAL OIL	ABANDONED DRY	SERVICE					
1951	20	18	14	4	6	10	2	14 956	103	0	0	0
1952	74	68	40	28	25	33	10	58 344	33	0	0	0
1953	119	102	31	71	73	29	0	76 682	9	0	0	0
1954	340	310	114	196	217	90	3	233 170	0	0	0	0
1955	378	354	57	297	279	66	9	254 774	5	0	0	0
1956	269	248	30	218	202	38	8	176 994	14	0	0	0
1957	225	224	71	153	139	85	0	155 469	2	0	0	0
1958	92	92	16	76	61	31	0	60 430	0	0	0	0
1959	48	47	16	31	30	17	0	30 792	0	2	0	0
1960	65	66	12	54	50	15	1	43 918	0	0	0	0
1961	25	28	11	17	11	16	1	17 389	0	1	0	0
1962	28	24	3	21	15	9	0	17 683	0	0	0	2
1963	59	57	9	48	39	16	2	43 451	0	0	0	0
1964	107	104	32	72	68	35	1	75 303	0	3	0	0
1965	69	65	40	25	27	38	0	50 298	2	8	0	0
1966	68	63	33	30	29	33	1	54 863	5	4	0	0
1967	90	85	42	43	44	41	0	67 068	0	0	0	0
1968	61	59	44	15	27	32	0	48 840	2	0	1	0
1969	55	46	30	16	14	29	3	34 376	38	0	0	0
1970	17	18	13	5	2	16	0	16 253	1	0	0	0
1971	18	15	6	9	2	8	5	13 026	6	0	0	0
1972	10	9	6	3	0	7	2	6 778	1	0	0	0
1973	19	17	17	0	0	17	0	14 083	0	0	0	0
1974	21	21	17	4	6	14	1	22 710	1	0	0	0
1975	5	7	7	0	2	4	1	6 717	4	0	0	0
1976	14	14	13	1	3	11	1	11 161	0	0	2	0
1977	19	11	10	1	9	2	0	9 359	0	0	2	0
1978	16	22	12	10	10	6	6	18 329	0	0	0	0
1979	27	25	9	16	16	9	0	20 537	0	0	0	0
1980	27	27	12	15	18	9	0	23 508	0	6	0	0
1981	71	62	33	29	47	15	0	61 011	0	5	0	0
1982	201	195	78	117	164	30	1	184 282	0	0	0	0
1983	284	247	60	187	223	24	0	229 304	0	5	0	0
1984	249	246	36	210	218	28	0	220 631	0	0	0	0
1985	306	261	52	209	229	29	3	228 387	7	0	0	0
1986	116	134	44	90	122	11	1	118 675	0	1	0	0
1987	116	107	33	74	90	17	0	96 970	0	0	0	0
TOTAL	3,728	3,498	1,103	2,395	2,517	920	62	2 816 521	233	35	5	2

E - Exploratory; D - development; Service - water supply, waste disposal, water injection wells;
STH - Structure test hole; GSW - gas storage well; PTH - potash test hole.
*"Other Wells Drilled" are not included in the Number of Wells Licensed, Number of Wells Drilled, or Metres Drilled columns.

WELLS DRILLED IN MANITOBA
1951-1987



Summary of 1987 Drilling Activity (by month)

	Total 1987	January	February	March	April	May	June	July	August	September	October	November	December
Well Licenses Issued		3	6	2	2	7	12	13	7	22	23	15	4
Rigs Operated	N/A	-	3	2	1	2	6	3	4	5	7	6	5
Wells Drilled (Total):	107	-	4	2	1	2	14	10	10	14	26	18	6
Development	74	-	3	2	-	1	13	9	7	8	18	10	3
Exploratory Outpost	7	-	-	-	-	-	-	-	-	1	3	1	2
Exploratory NFW	12	-	-	-	1	1	1	-	2	2	3	2	-
Exploratory DFW	12	-	1	-	-	-	-	1	1	2	1	5	1
Exploratory NFW	2	-	-	-	-	-	-	-	-	1	1	-	-
Metres Drilled (Total):	96 970	-	3 505	1 735	745	1 622	12 336	9 061	9 322	13 181	23 372	16 626	5 465
Development	66 919	-	2 650	1 735	-	872	11 461	8 226	6 156	7 828	16 114	9 052	2 825
Exploratory Outpost	6 559	-	-	-	-	-	-	-	-	835	3 131	938	1 655
Exploratory NFW	10 374	-	-	-	745	750	875	-	1 811	1 790	2 273	2 130	-
Exploratory DFW	11 202	-	855	-	-	-	-	835	1 355	1 757	909	4 506	985
Exploratory NFW	1 916	-	-	-	-	-	-	-	-	971	945	-	
New Potential Oil Wells	90	-	4	2	-	1	13	8	7	13	20	17	5
Abandoned Dry	17	-	-	-	1	1	1	2	3	1	6	1	1

1987 Exploratory Wells Cased for Production

Location	Operator	Classification
Daly Area		
13-21-10-28 WPM	Tundra Oil and Gas	Deeper Pool Wildcat
12-9-10-28 WPM	Chevron Canada Resources Ltd.	Deeper Pool Wildcat
4-2-10-29 WPM	Manitoba Oil and Gas Corp.	Deeper Pool Wildcat
7-16-10-29 WPM	Manitoba Oil and Gas Corp.	New Field Wildcat
7-20-10-28 WPM	Tundra Oil and Gas	Outpost
11-35-9-29 WPM	Rideau Petroleums Ltd.	Deeper Pool Wildcat
8-29-9-29 WPM	Rideau Petroleums Ltd.	Deeper Pool Wildcat
10-16-9-29 WPM	Rideau Petroleums Ltd.	Deeper Pool Wildcat
6-33-9-29 WPM	Manitoba Oil and Gas Corp.	Deeper Pool Wildcat
4-22-10-28 WPM	Manitoba Oil and Gas Corp.	Deeper Pool Wildcat
13-16-10-28 WPM	Manitoba Oil and Gas Corp.	Outpost
5-15-9-29 WPM	Rideau Petroleums Ltd.	Deeper Pool Wildcat
13-6-9-27 WPM	Manitoba Oil and Gas Corp.	Deeper Pool Wildcat
Waskada Area		
2-20-1-25 WPM	Omega Hydrocarbons Ltd.	New Pool Wildcat
10-10-1-25 WPM	Omega Hydrocarbons Ltd.	New Pool Wildcat
Pierson Area		
14-33-2-29 WPM	Tundra Oil and Gas	Out Post
4-1-2-29 WPM	Home Oil Company Ltd.	New Field Wildcat
S. Pierson Area		
6-17-2-29 WPM	Home Oil Company Ltd.	Outpost
Coulter Area		
16-7-1-27	Tundra Oil and Gas	Outpost
Kirkella Area		
A1-17-12-29	Rideau Petroleums Ltd.	Deeper Pool Wildcat
Other Areas		
13-33-1-28	Tundra Oil and Gas	New Field Wildcat

EXPLORATORY* WELLS DRILLED IN MANITOBA BY FORMATION
1974 - 1987

Year	(Geological Period of Formation Drilled Into)								
	Cretaceous	Jurassic	Mississippian	Devonian	Silurian	Ordovician	Cambrian	Precambrian	Total
1974	1	-	5	-	-	-	-	12	18
1975	1	-	4	1	-	4	-	1	11
1976	-	-	5	7	-	-	-	-	12
1977	-	-	10	-	-	-	-	-	10
1978	-	-	9	1	-	1	-	1	12
1979	-	-	6	1	-	-	-	2	9
1980	-	-	8	1	1	-	-	1	11
1981	-	-	21	6	-	-	-	5	32
1982	-	-	72	5	-	-	-	1	78
1983	-	1	48	9	1	-	-	1	60
1984	1	-	32	2	-	-	-	1	36
1985	-	-	49	2	-	-	-	1	52
1986	-	-	30	13	-	-	-	-	43
1987	-	-	13	19	1	-	-	-	33
TOTAL	3	1	312	67	3	5	-	26	417

* Exploratory - includes outpost, exploratory, new field wildcat, new pool wildcat and deeper pool wildcat classifications

Illegal width.

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DETAILED DRILLING STATISTICS
1981-1987

"Exploratory"

Year	New Field Wildcat Drld	New Field Wildcat Success(%)	Outpost Drld	Outpost Success(%)	Deeper Pool Test Drld	Deeper Pool Test Success(%)	New Pool Wildcat Drld	New Pool Wildcat Success(%)	Sub Total
1981	23	35%	6	100%	4	100%	N/A	N/A	33
1982	43	44%	35	94%	0	N/A	N/A	N/A	78
1983	29	59%	27	93%	4	100%	N/A	N/A	60
1984	19	37%	16	50%	1	100%	N/A	N/A	36
1985	29	60%	22	82%	1	100%	N/A	N/A	52
1986	21	86%	16	94%	6	100%	N/A	N/A	43
1987	12	25%	7	57%	12	92%	2	100%	33

	"Development" Drld	"Development" Success(%)	"Other" Service	"Other" STH/PTH	"Total"
1981	29	100%	0	5	67
1982	117	95%	0	0	195
1983	187	95%	0	5	252
1984	210	95%	0	0	246
1985	209	92%	3	7	268
1986	90	95%	1	1	135
1987	74	93%	0	0	107

MANITOBA

NON-ABANDONED WELLS (Dec. 1987)

Field	During December 1987									(Dec.31/86) Drilled but Not Activated***	(Dec.31/86) Total Non-Abandoned Wells***
	Active Oil Producers*	Inactive Oil Producers*	Active WSW	Inactive WSW	Active GIW	Active SWD**	Inactive SWD**	Active WIW	Inactive WIW		
Daly	354	58	-	1	-	14	2	27	7	23	486
Tilston	15	6	-	-	-	1	1	-	-	1	24
Waskada	369	45	5	-	1	3	-	81	8	7	519
Lulu Lake	7	-	-	-	-	1	-	-	-	1	9
Virden	543	40	-	-	-	10	5	121	-	3	730
Whitewater	28	2	-	-	-	1	1	-	1	2	35
Pierson	46	9	-	-	-	4	-	-	-	1	60
Kirkella	29	8	-	-	-	4	-	-	-	1	42
Souris-Hartney	7	2	-	-	-	1	-	-	-	-	10
Coulter	4	5	-	-	-	1	-	-	-	3	13
South Pierson	13	7	-	-	-	1	-	-	-	8	29
Other Areas	12	6	-	-	-	1	-	-	-	2	21
Confidential Wells	7	2	-	-	-	-	-	-	-	****	9
	1 434	190	5	1	1	50	9	229	16	52	1 987

1987 Designated Field Boundaries

Active Wells (Dec. 1987) = 1 719

* Dual wells not included.

** Dual wells included.

*** Excludes abandonments during December

**** Included in above listed Fields.

Production and Markets

Manitoba's annual oil production decreased for the first time since 1981.

Annual oil production in Manitoba was 781 806 m^3 (4.9 million barrels) in 1987, representing a 5% decrease over 1986.

During December 1987 the Province had 1,434 oil wells producing.

Oil production from the Virden, Waskada and Daly Fields during 1987 accounted for 41%, 28% and 20% respectively of Manitoba's total production.

The South Pierson Field experienced the largest increase in oil production, 5 749 m^3 or an 89% increase.

In 1987, approximately 400 000 m^3 (51% of total production) was classified as "New" oil (oil produced from wells drilled since 1973).

Of the total amount of Manitoba oil purchased by refiners in 1987, approximately 38% was refined in Ontario, 12% was utilized by refiners in Quebec and 50% went to refineries in the United States.

1987 Annual Production

By Operator	Vol (m^3)
Chevron Canada Resources Limited	329 820.2
Omega Hydrocarbons Ltd.	168 341.3
Enron Oil Canada Ltd.	31 574.3
Tundra Oil and Gas	31 326.5
Newscope Resources Limited	26 973.6
Canada Northwest Energy Limited	24 297.7
International Interlake Industries Ltd.	24 213.5
Rideau Petroleum Ltd.	23 463.9
Canadian Roxy Petroleum Ltd.	16 767.3
Resman Holdings Ltd.	12 197.8
Samedan Oil of Canada Inc.	10 215.0
Home Oil Canada Limited	8 918.9
Mead Petroleum & Farms Ltd.	6 837.7
ICG Resouces Ltd.	5 787.7
Voyager Energy Company	5 548.1
Saskoil Resources Inc.	4 956.4
Resman Oil and Gas Ltd.	4 854.4
Ranchmen's Resources Ltd.	4 550.4
Lyleton Corporation	4 197.6
Murphy Oil Company Ltd.	4 067.4
Can-Tex Drilling & Exploration Ltd.	3 691.1
Manitoba Oil and Gas Corporation	3 621.5
Triton Petroleum Limited	3 071.7
Koch Exploration Canada Ltd.	2 400.2
Suncor Inc.	2 247.0
Texaco Exploration Canada Ltd.	2 206.8
C.W. Cawston and Associates	2 130.4
Canamax Resources Inc.	1 765.6
Peregrine Petroleums Ltd.	1 611.8
John Deroy Gerrand Oil Syndicate	1 480.7
Other	8 669.5
TOTAL	781 806.0

By Field	Vol (m^3)
Virden	318 193.7
Waskada	219 106.5
Daly	160 063.8
Pierson	21 646.3
Whitewater	19 266.7
South Pierson	12 246.6
Kirkella	8 573.8
Tilston	6 897.7
Lulu Lake	3 902.2
Souris Hartney	2 479.6
Coulter	1 007.2
Other Areas	6 843.4
Conf. Wells	1 578.5
	781 806.0

1987 Monthly Crude Oil Production by Field
(m^3)

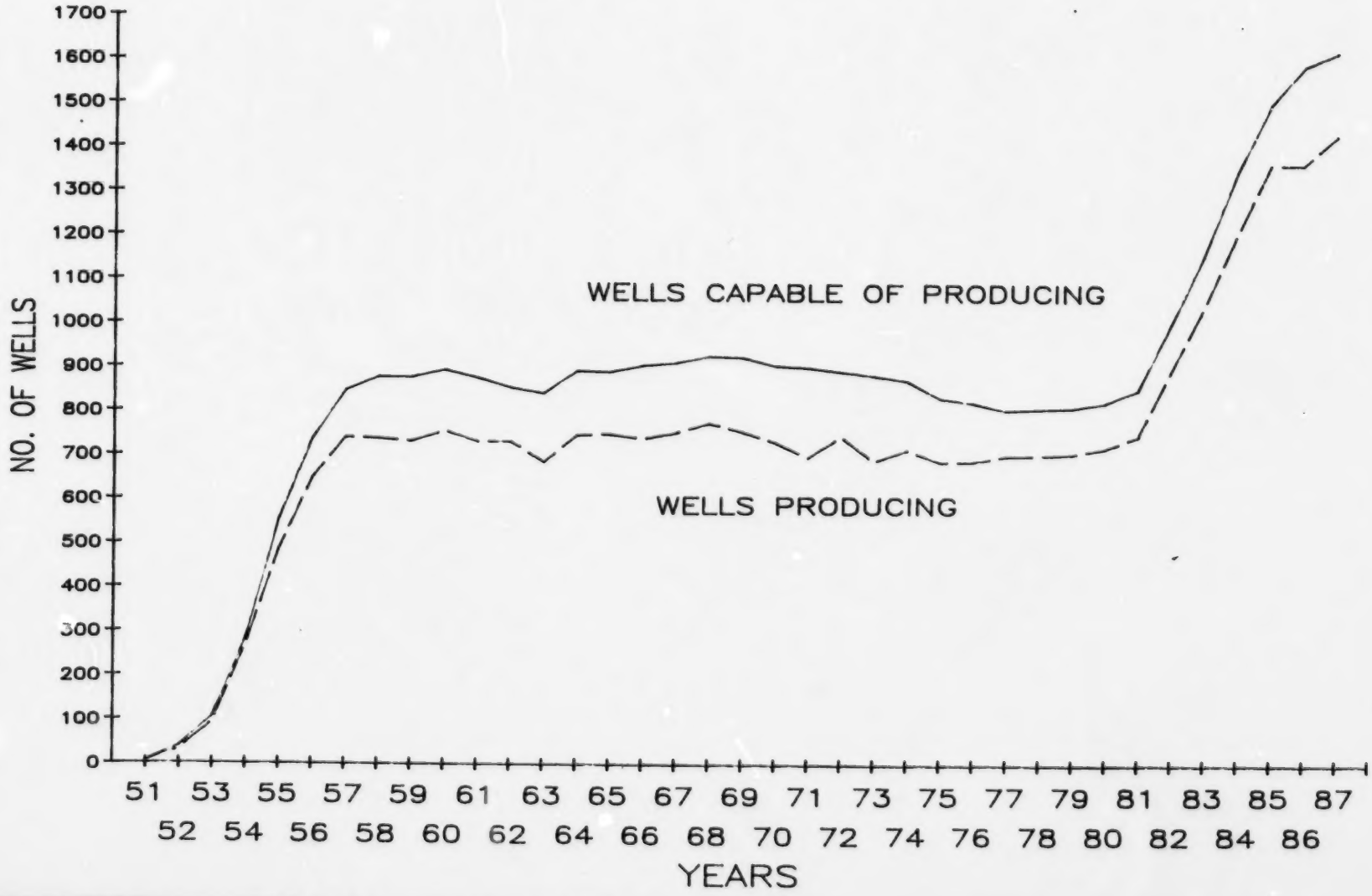
Field	January	February	March	April	May	June	July	August	September	October	November	December	Total
Daly	13 989.2	12 369.7	13 353.0	11 798.1	13 299.3	13 265.8	13 842.6	13 765.5	13 435.8	13 478.5	13 242.5	14 223.8	160 063.8
Tilston	658.4	730.3	712.2	621.9	575.8	551.7	531.4	500.8	464.1	486.9	545.3	518.9	6 897.7
Waskada	19 472.9	17 770.5	18 890.3	18 282.1	19 413.5	17 784.9	18 109.6	18 043.0	17 844.4	17 667.5	18 141.2	17 687.1	219 106.5
Lulu Lake	351.9	323.3	357.8	323.7	350.1	346.8	342.8	345.6	310.9	305.4	324.9	219.0	3 902.2
Virden	27 406.1	24 756.4	27 020.1	25 278.9	26 394.9	26 059.5	27 174.5	26 806.4	26 437.0	27 176.8	26 346.8	27 336.3	318 193.7
Whitewater	1 945.9	1 676.3	1 615.3	1 239.6	1 676.4	1 530.3	1 470.1	1 566.2	1 512.8	1 643.7	1 558.2	1 831.9	19 266.7
Pierson	1 706.2	1 657.9	1 848.7	1 779.9	1 901.4	1 779.1	1 901.0	1 782.1	1 698.5	1 764.3	1 859.2	1 968.0	21 646.3
Kirkella	778.5	685.4	663.9	617.9	739.0	737.6	716.5	782.3	687.9	739.2	679.0	746.6	8 573.8
Souris Hartney	210.2	194.0	206.2	209.2	225.5	215.3	225.0	217.6	153.1	170.0	225.2	228.3	2 479.6
Coulter	52.5	49.3	70.3	47.3	186.8	121.2	97.2	109.4	91.1	66.3	51.0	64.8	1 007.2
South Pierson	1 050.5	895.8	1 026.1	951.5	930.3	1 021.3	1 058.9	1 029.5	1 006.9	915.5	1 045.9	1 314.4	12 246.6
Other Areas	438.8	387.4	296.4	278.9	342.4	429.9	548.7	493.6	675.0	745.4	1 118.2	1 088.7	6 843.4
Conf. Wells	-	-	6.7	6.1	9.8	4.8	144.2	116.6	119.9	254.4	471.4	444.6	1 578.5
Undesignated Pools	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	68 061.1	61 496.3	66 067.0	61 435.1	66 045.2	63 848.2	66 162.4	65 558.6	64 437.4	65 413.5	65 608.8	67 672.4	781 806.0

MANITOBA OIL AND WATER PRODUCTION

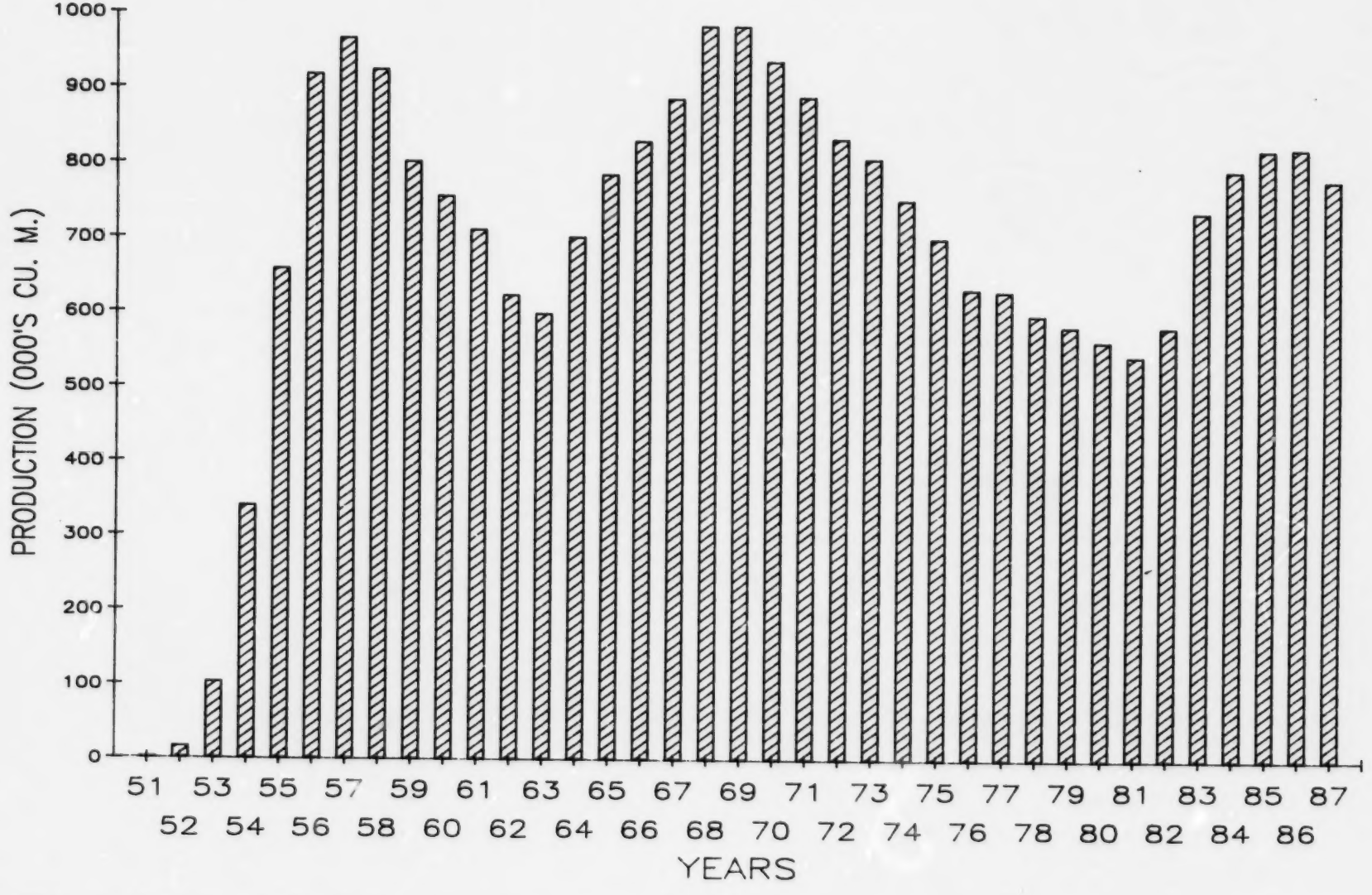
1951-1987

YEAR	WELLS CAPABLE OF PRODUCING (DECEMBER)	WELLS PRODUCING (DECEMBER)	OIL PRODUCTION (m^3)	WATER PRODUCTION (m^3)	TOTAL FLUID PRODUCTION (m^3)	AVG. WATER CUT (%)	AVG. OIL PRODUCTION (m^3/day)
1951	5	5	1 854	152	2 006	7.6	5.08
1952	39	32	17 022	4 068	23 096	17.6	46.64
1953	105	93	104 193	50 614	154 807	32.7	285.46
1954	284	269	341 410	112 226	453 636	24.7	935.37
1955	554	486	658 802	160 092	818 894	19.5	1 804.94
1956	736	647	919 539	754 908	1 674 447	45.1	2 519.28
1957	846	739	967 721	1 709 792	2 677 513	63.9	2 651.29
1958	877	736	926 322	1 183 122	2 109 444	56.1	2 537.87
1959	875	730	803 461	1 273 632	2 077 093	61.3	2 201.26
1960	893	755	757 054	1 400 880	2 157 934	64.9	2 074.12
1961	874	729	711 969	1 510 627	2 222 596	68.0	1 950.60
1962	852	730	623 989	1 549 430	2 173 419	71.3	1 709.56
1963	839	683	599 212	1 550 287	2 149 499	72.1	1 641.68
1964	892	745	701 920	1 752 708	2 454 628	71.4	1 923.07
1965	889	748	786 050	2 004 068	2 790 118	71.8	2 153.56
1966	905	737	831 248	2 162 719	2 993 967	72.2	2 277.39
1967	911	752	887 572	2 288 271	3 175 843	72.1	2 431.70
1968	926	774	986 024	2 839 697	3 825 721	74.2	2 701.44
1969	923	754	985 981	3 091 398	4 077 379	75.8	2 701.32
1970	904	730	939 175	3 105 414	4 044 589	76.8	2 573.08
1971	900	695	890 622	3 463 885	4 354 507	79.5	2 440.06
1972	891	745	835 380	3 744 738	4 580 118	81.8	2 288.71
1973	882	687	807 882	3 983 740	4 791 622	83.1	2 213.38
1974	871	714	754 667	3 992 698	4 747 365	84.1	2 067.58
1975	831	686	701 459	3 975 389	4 676 848	85.0	1 921.81
1976	821	688	633 322	4 020 078	4 653 400	86.4	1 735.13
1977	804	701	630 466	4 226 135	4 856 601	87.0	1 727.30
1978	808	703	598 354	4 073 299	4 671 653	87.2	1 639.33
1979	811	706	583 377	3 946 337	4 529 714	87.1	1 598.29
1980	823	720	563 482	4 171 099	4 734 581	88.1	1 543.79
1981	853	748	542 695	4 565 210	5 107 905	89.4	1 486.84
1982	1002	896	582 283	4 582 081	5 164 364	88.7	1 595.13
1983	1160	1041	736 934	5 079 646	5 816 580	87.3	2 022.74
1984	1350	1209	793 286	5 575 632	6 368 918	87.5	2 173.39
1985	1505	1366	820 729	5 685 409	6 686 138	87.7	2 248.57
1986	1592	1367	823 322	6 215 248	7 038 570	88.3	2 255.68
1987	1624	1434	781 806	6 317 251	7 099 057	89.0	2 141.93
TOTAL	N/A	N/A	25 630 584	106 301 980	131 932 564	N/A	N/A

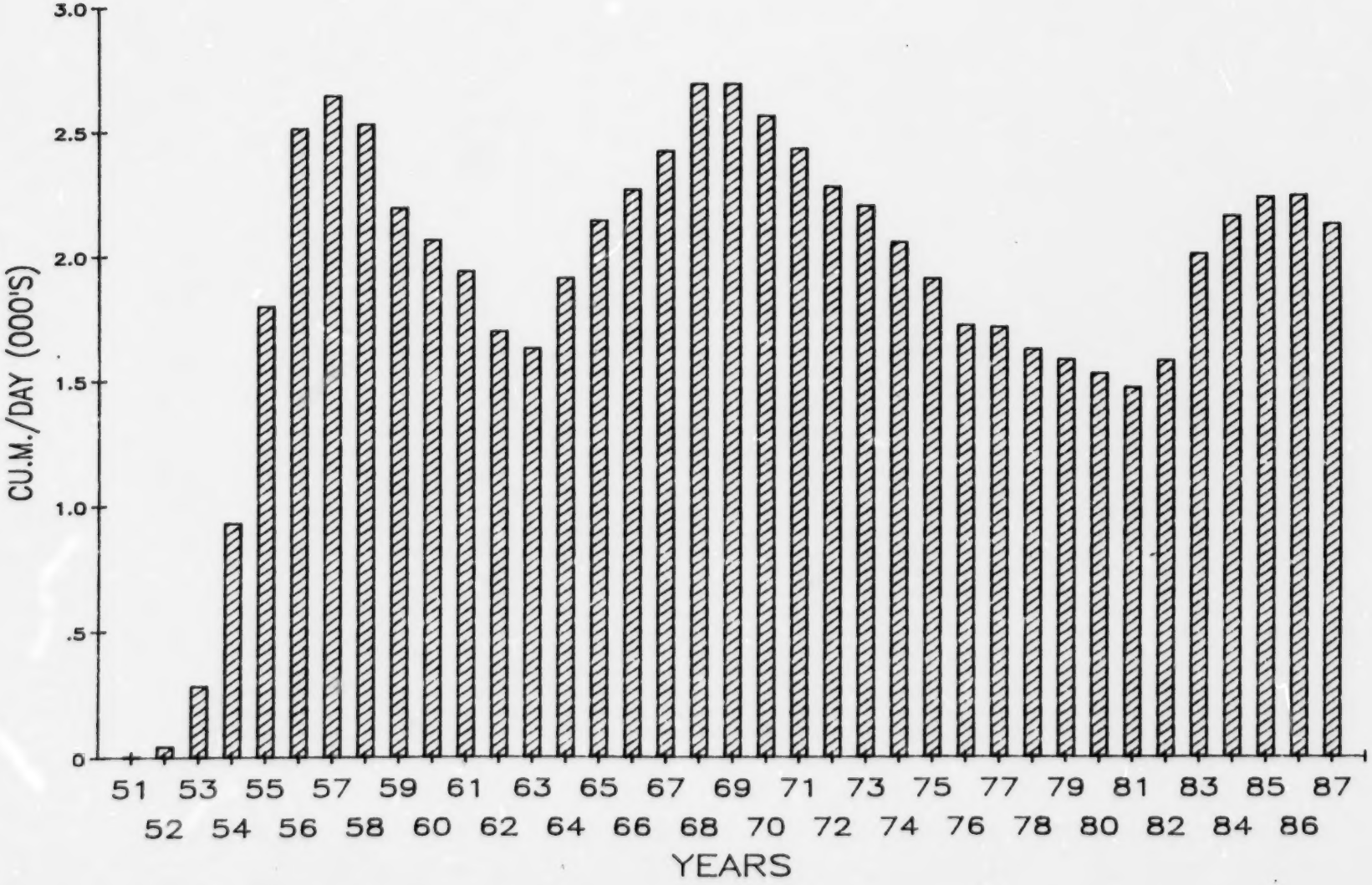
OIL PRODUCING WELLS IN MANITOBA
1951 - 1987



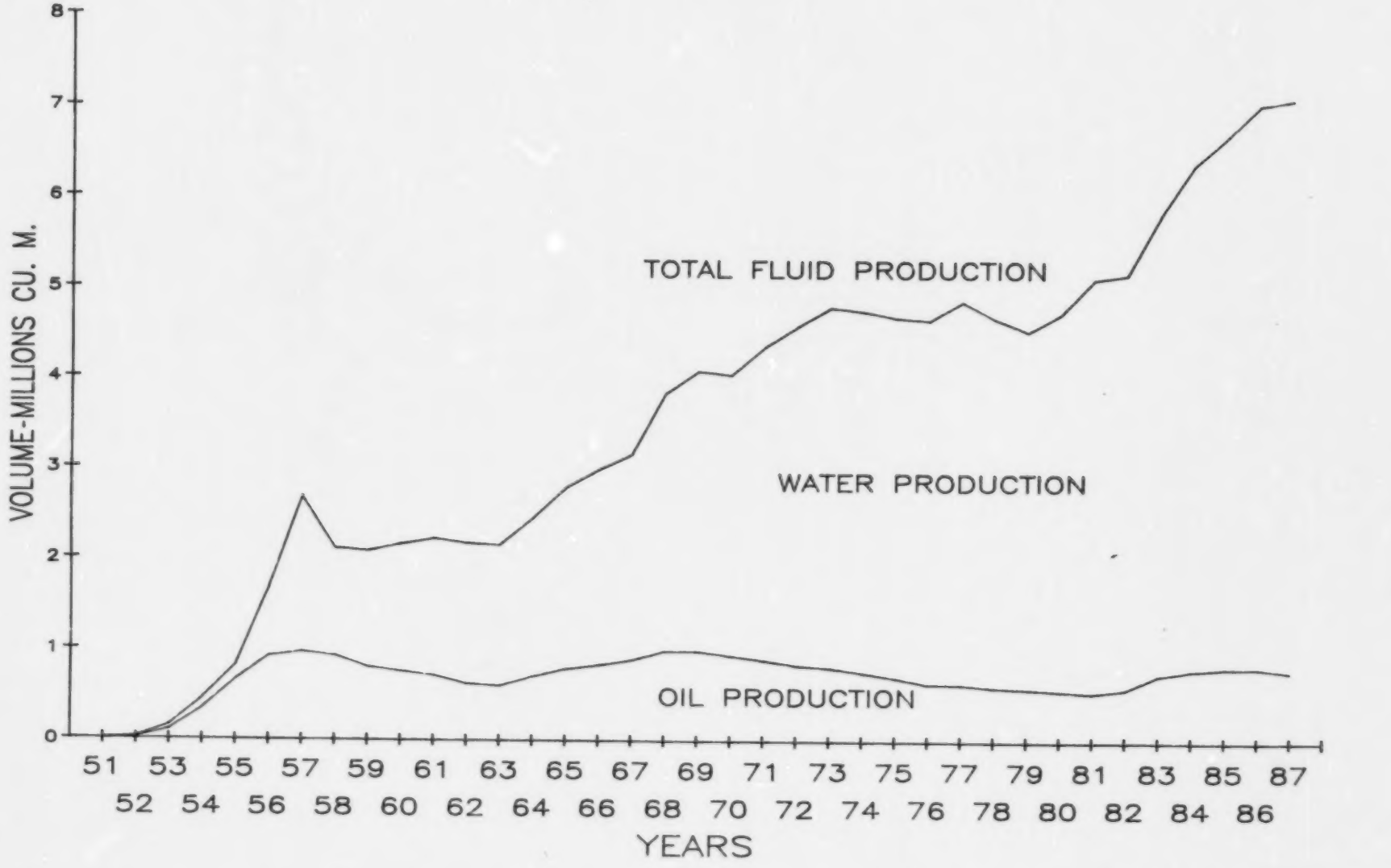
MANITOBA CRUDE OIL ANNUAL PRODUCTION
1951-1987



AVERAGE DAILY OIL PRODUCTION
1951 - 1987



MANITOBA OIL AND WATER PRODUCTION
1951-1987



Manitoba

Comparison of 1987 vs 1986 Oil Production by Field

	1987		1986		Change 1987/1986 increase/(decrease)	
	m^3*	% of Total	m^3*	% of Total	m^3	% Change
Daly	160 064	20.5	167 050	20.3	(6 986)	(4.2)
Tilston	6 898	0.9	6 947	0.8	(49)	(0.7)
Waskada	219 107	28.0	248 705	30.3	(29 598)	(11.9)
Lulu Lake	3 902	0.5	3 995	0.5	(93)	(2.3)
Virden	318 194	40.6	320 496	38.9	(2 302)	(0.7)
Whitewater	19 267	2.5	19 895	2.4	(628)	(3.2)
Pierson	21 646	2.8	20 958	2.6	688	3.3
Kirkella	8 574	1.1	8 558	1.0	16	0.2
Souris Hartney	2 480	0.3	2 571	0.3	(91)	(3.5)
Coulter	1 007	0.1	751	0.1	256	34.1
South Pierson	12 247	1.6	6 498	0.8	5 749	88.5
Other Areas	6 843	0.9	4 376	0.5	2 467	56.4
Confidential wells	1 579	0.2	12 521	1.5	(10 942)	(87.4)
Total	781 808	100	823 321	100	(41 513)	(5.0)

*Field totals rounded to nearest whole number and may not agree with total actual production.

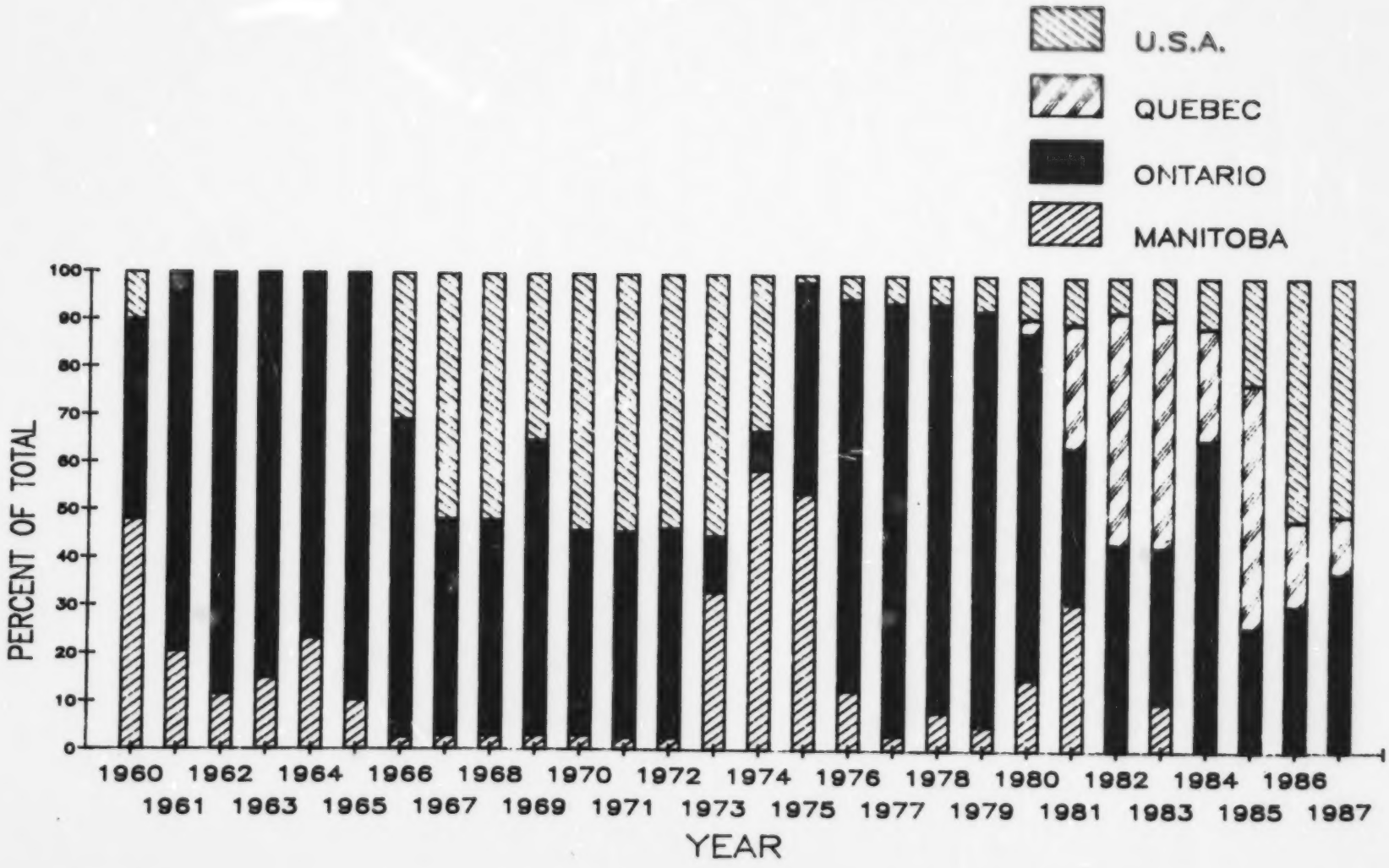
DISPOSITION OF MANITOBA PRODUCED CRUDE OIL 1951-1987 (m^3)*

YEAR	MANITOBA**	ONTARIO	QUEBEC	USA	TOTAL
1951-1959		DATA NOT AVAILABLE			
1960	371 732	321 440	-	79 611	772 783
1961	148 029	573 637	-	-	721 666
1962	74 471	558 567	-	6 420	639 458
1963	94 452	533 598	-	-	628 050
1964	164 326	539 152	-	-	703 478
1965	82 651	701 955	-	-	784 606
1966	22 572	564 797	-	263 011	850 380
1967	27 417	416 097	-	476 577	920 091
1968	30 180	455 207	-	524 570	1 009 957
1969	31 323	620 216	-	351 918	1 003 457
1970	30 011	408 452	-	515 769	954 232
1971	24 539	388 389	-	490 412	903 340
1972	24 270	378 571	-	465 552	868 393
1973	273 687	95 745	-	455 093	824 525
1974	449 887	60 934	-	252 605	763 426
1975	383 383	312 397	-	12 596	708 376
1976	82 747	535 162	-	34 356	652 265
1977	21 877	609 298	-	41 309	672 484
1978	53 162	552 889	-	40 450	646 501
1979	33 258	549 524	-	48 261	631 043
1980	92 921	444 319	19 026	55 378	611 644
1981	180 402	189 659	150 177	57 702	577 940
1982	-	331 564	371 331	57 465	760 360
1983	81 887	258 611	380 911	71 544	792 953
1984	-	550 489	198 168	90 874	839 531
1985	-	245 364	483 508	211 331	940 203
1986	-	300 446	175 962	499 997	976 405
1987	-	349 807	113 418	464 806	928 031
TOTAL	2 779 184	11 846 286	1 892 501	5 567 607	22 085 578

* Includes some oil produced in Saskatchewan and trucked into Manitoba.

** Manitoba's last refinery (Shell St. Boniface) closed in 1983.

DISPOSITION OF MANITOBA PRODUCED CRUDE OIL 1960-1987



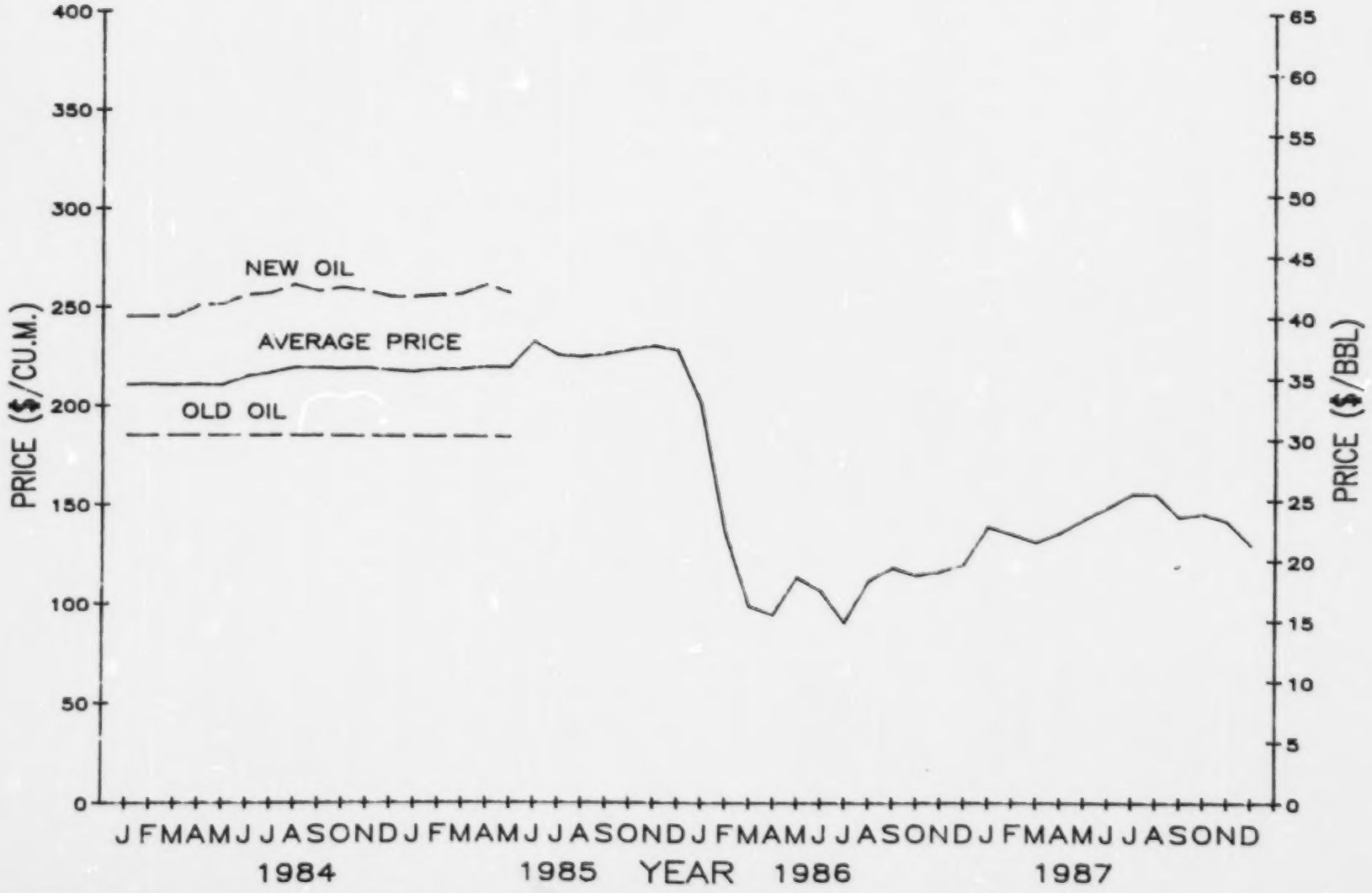
Oil Prices

Following the collapse in world oil prices in early 1986, oil prices continued to steadily recover until August of 1987. Since then, world oil prices have steadily declined.

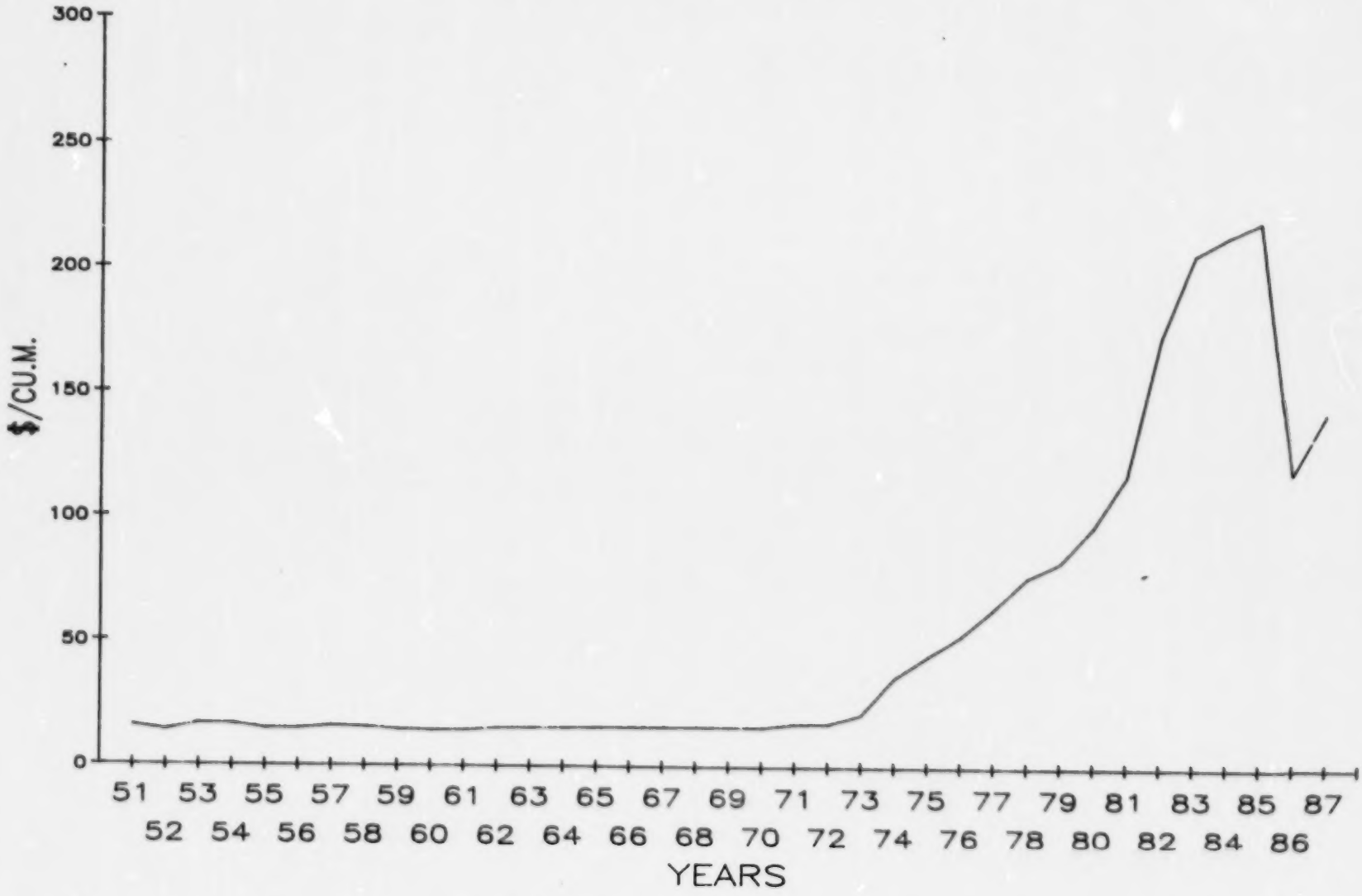
In January 1987, the average price of crude oil produced in Manitoba was $\$140.77/m^3$ ($22.37 Cdn. per barrel). Prices increased to a high of $\$157.00/m^3$ ($24.95 Cdn. per barrel) in July and August and then steadily fell closing out the year at an average low of $131.00/m^3$ in December ($20.82 Cdn. per barrel).

In 1987, Manitoba's overall average crude oil price increased 20% to $\$143.00/m^3$ ($22.70 Cdn. per barrel) compared with 1986's average of $\$119.00/m^3$ ($18.90 Cdn. per barrel).

MANITOBA MONTHLY CRUDE OIL PRICES 1984 -1987



MANITOBA AVERAGE CRUDE OIL PRICE
1951 - 1987



Value of Production

The total value of oil production during 1987 was $109.1 million, up 14% over 1986. Despite a production decline, higher crude oil prices supported an overall increase in the value of crude oil production.

Provincial Revenue from Oil Production

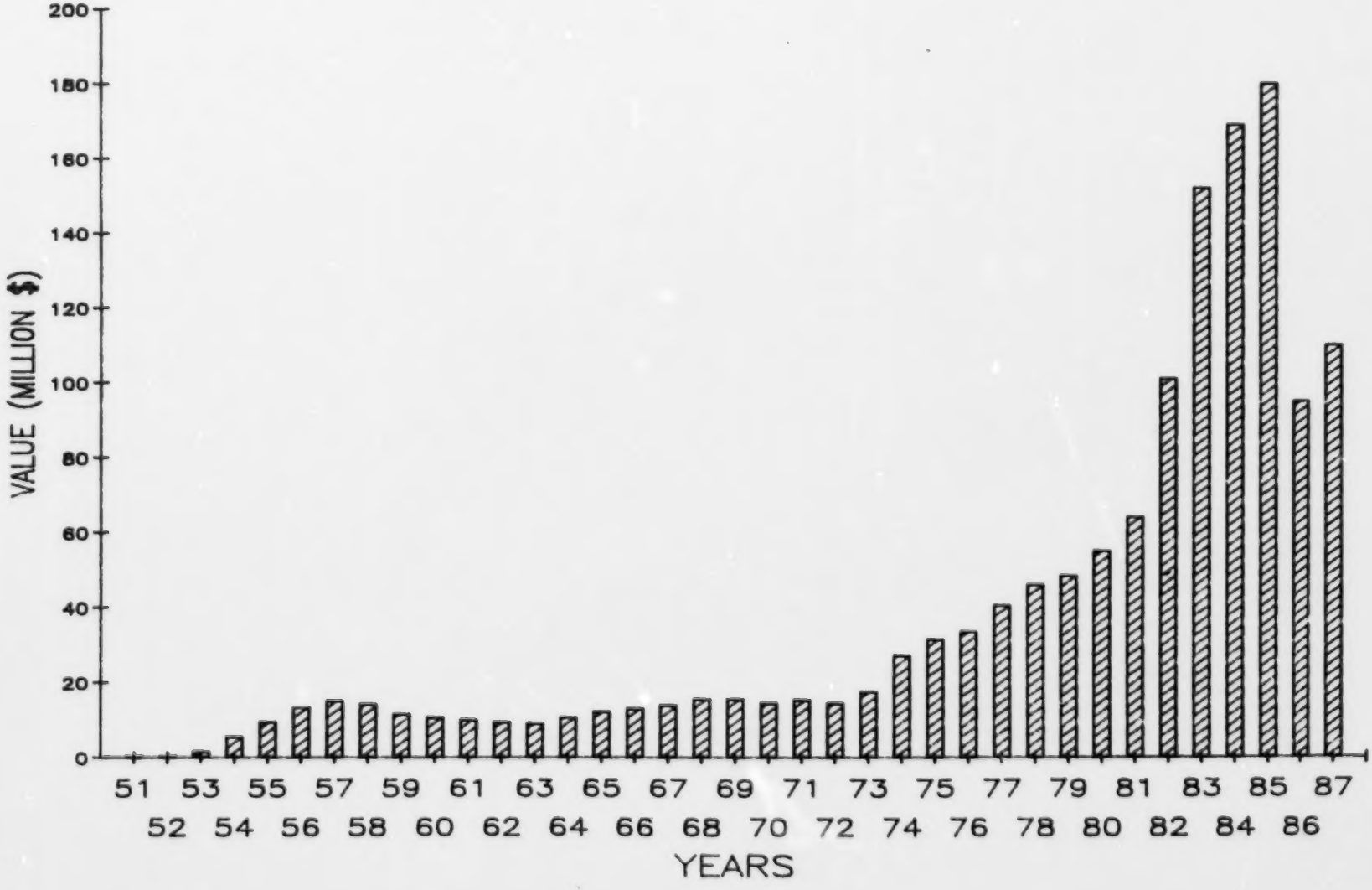
Although production declined 5 percent and lease sale revenues were down from 1986, the increase in crude oil prices managed to prop up direct government revenues in 1987. During 1987, the Manitoba government collected approximately $12.3 million in revenues ($2.7 million in Crown oil royalties, $8.7 million in freehold oil taxes, and $0.9 million in Crown lease sale bonuses, rentals and fees), resulting in a 3% increase over 1986. These figures do not include provincial revenues in the form of corporate capital tax, sales tax, municipal tax and corporate and individual income tax.

MANITOBA CRUDE OIL PRODUCTION AND SALES VALUE

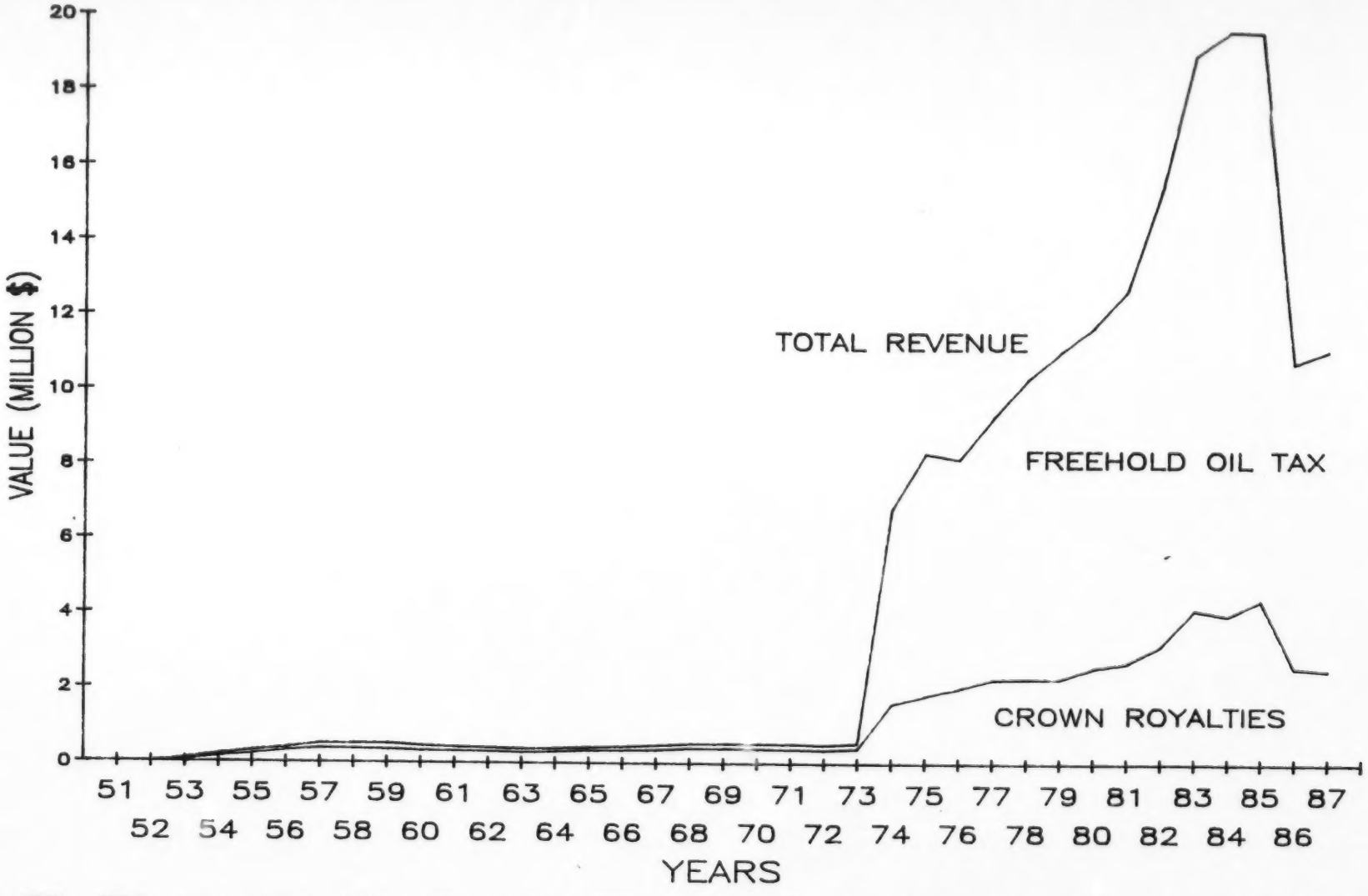
1951-87

YEAR	ANNUAL PRODUCTION (m^3)	CUMULATIVE PRODUCTION DEC. 31 (m^3)	VALUE OF SALES (000's $)	CUMULATIVE VALUE OF SALES (DEC. 31) (000's $)
1951	1 854	1 854	26	26
1952	17 022	18 876	229	255
1953	104 193	123 069	1,715	1,970
1954	341 410	464 479	5,620	7,590
1955	658 802	1 123 281	9,517	17,107
1956	919 539	2 042 820	13,417	30,524
1957	967 721	3 010 541	15,231	45,755
1958	926 322	3 936 863	14,265	60,020
1959	803 461	4 740 324	11,615	71,635
1960	757 054	5 497 378	10,690	82,325
1961	711 969	6 209 347	10,133	92,458
1962	623 989	6 833 336	9,500	101,958
1963	599 212	7 432 548	9,183	111,141
1964	701 920	8 134 468	10,694	121,835
1965	786 050	8 920 518	12,270	134,105
1966	831 248	9 751 766	13,087	147,192
1967	887 572	10 639 338	13,974	161,166
1968	986 024	11 625 362	15,561	176,727
1969	985 981	12 611 343	15,615	192,342
1970	939 175	13 550 518	14,858	207,200
1971	890 622	14 441 140	15,445	222,645
1972	835 380	15 276 520	14,586	237,231
1973	807 882	16 084 402	17,155	254,386
1974	754 667	16 839 069	27,182	281,568
1975	701 459	17 540 528	31,453	313,021
1976	633 322	18 173 850	33,533	346,554
1977	630 466	18 804 316	40,457	387,011
1978	598 354	19 402 670	45,953	432,964
1979	583 377	19 986 047	48,403	481,367
1980	563 482	20 549 529	54,958	536,325
1981	542 695	21 092 224	64,055	600,380
1982	582 283	21 674 507	100,537	700,917
1983	736 934	22 411 441	152,350	853,267
1984	793 286	23 204 727	169,296	1,022,563
1985	820 729	24 025 456	180,049	1,202,612
1986	823 322	24 848 778	95,337	1,297,949
1987	781 806	25 630 584	109,142	1,407,091

VALUE OF OIL PRODUCTION IN MANITOBA
1951 - 1987



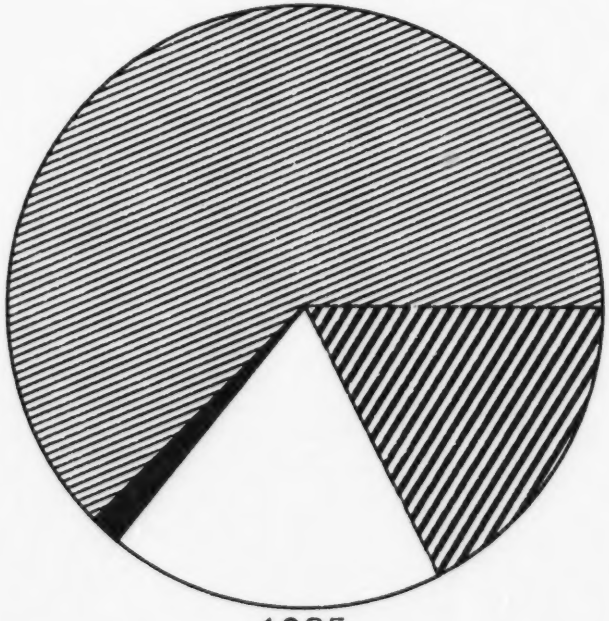
CROWN ROYALTIES AND TAXES FROM OIL PRODUCTION 1951 - 1987



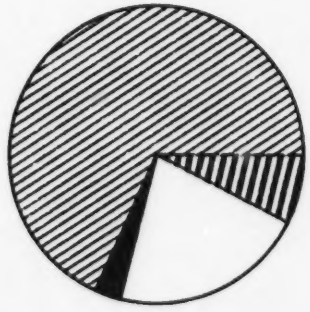
DIRECT REVENUES TO CROWN FROM OIL EXPLORATION AND DEVELOPMENT IN MANITOBA

LEGEND

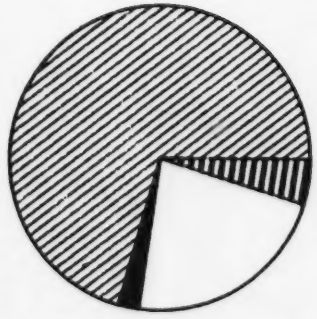
	1985	1986	1987
FREEHOLD OIL TAX	62.7%	68.3%	70.6%
FEES & RENTALS	1.6%	2.8%	2.2%
CROWN ROYALTIES	18.3%	21.4%	22.4%
LEASE BONUSES	17.5%	7.4%	4.8%



1985
TOTAL REVENUE
$24.15 MILLION



1986
TOTAL REVENUE
$11.97 MILLION



1987
TOTAL REVENUE
$12.30 MILLION

DIRECT REVENUES TO CROWN FROM OIL EXPLORATION AND DEVELOPMENT IN MANITOBA*

1951-1987

YEAR	CROWN ROYALTIES	FREEHOLD OIL TAX ($)**	CROWN LEASE*** RENTAL ($)	CROWN LAND**** SALES ($)	MISCELLANEOUS FEES ($)	TOTAL DIRECT* REVENUES ($)
1951	2,000	-	4,000	-	5,000	11,000
1952	7,000	-	7,000	-	9,000	23,000
1953	50,000	46,000	6,000	-	8,000	110,000
1954	156,000	64,000	18,000	88,000	24,000	350,000
1955	230,000	92,000	69,000	627,000	10,000	1,028,000
1956	318,000	83,000	512,000	156,000	18,000	1,087,000
1957	382,000	126,000	421,000	110,000	-	1,039,000
1958	356,000	137,000	293,000	-	31,000	817,000
1959	344,000	165,000	201,000	14,000	2,000	726,000
1960	313,000	130,000	98,000	4,000	2,000	547,000
1961	306,000	105,000	93,000	135,000	5,000	644,000
1962	298,000	96,000	90,000	26,000	10,000	520,000
1963	276,000	91,000	47,000	40,000	3,000	457,000
1964	307,000	86,000	35,000	122,000	23,000	573,000
1965	344,000	84,000	62,000	102,000	3,000	595,000
1966	353,000	96,000	60,000	94,000	3,000	606,000
1967	370,000	111,000	56,000	83,000	10,000	630,000
1968	411,000	116,000	39,000	60,000	14,000	640,000
1969	405,000	128,000	31,000	84,000	4,000	652,000
1970	377,000	143,000	28,000	15,000	1,000	564,000
1971	373,000	143,000	21,000	34,000	2,000	573,000
1972	348,000	138,000	16,000	-	1,000	503,000
1973	404,000	144,000	15,000	-	2,000	565,000
1974	1,599,000	5,216,000	15,000	-	4,000	6,834,000
1975	1,823,000	6,498,000	12,000	-	1,000	8,334,000
1976	2,024,000	6,128,000	11,000	-	11,000	8,174,000
1977	2,263,000	7,012,000	10,000	-	3,000	9,288,000
1978	2,281,000	8,018,000	10,000	-	6,000	10,315,000
1979	2,280,000	8,769,000	44,000	944,000	12,000	12,049,000
1980	2,575,000	9,159,000	128,000	1,884,000	11,000	13,757,000
1981	2,715,000	10,005,000	186,000	1,692,000	12,000	14,610,000
1982	3,176,000	12,194,000	231,000	1,058,000	28,000	16,687,000
1983	4,135,000	14,825,000	270,000	1,076,000	59,000	20,365,000
1984	3,972,000	15,622,000	275,000	2,187,000	68,000	22,124,000
1985	4,413,000	15,133,000	307,000	4,224,000	89,000	24,166,000
1986	2,570,000	8,179,000	277,000	917,000	53,000	11,996,000
1987	2,740,000	(8,650,000)	273,000	580,000	55,000	12,298,000
TOTAL	45,295,000	137,732,000	4,272,000	16,356,000	602,000	204,257,000

* Does not include corporate capital tax, sales tax, corporate and individual income tax or oil export tax.
** Now under the Oil and Gas Production Tax Act, Cap.037.
*** Includes only Rental Fees.
**** Includes Bonus and Application Fees.
Estimate ( )

Municipal Tax Assessments

Oil producers in Manitoba pay a municipal tax on wells and associated production facilities, including: oil wells, batteries, salt water disposal wells, salt water disposal plants, water injection wells, suspended wells and pipelines.

The municipal tax assessment on these facilities for the calendar year 1987 was approximately $8.8 million dollars, a decrease of 2% over the previous year.

Actual tax revenue from these assessments should amount to approximately $1.8 million for affected municipalities.

Surface Owners

Companies wishing to explore or develop oil and gas rights in Manitoba must negotiate a right-of-entry with the individual landowner. In return for this right-of-entry, the landowner receives a negotiated cash settlement.

Prior to drilling a well, an oil company is required to negotiate a surface lease with the landowner. The normal surface lease includes a first-year bonus payment and a subsequent annual rental fee for the duration of the lease.

Where the landowner is renting his land to another party, the oil company seeking right-of-entry must obtain the consent of both the landowner and the occupant.

After a lease has been signed, the landowner and occupant then determine what each will receive as his share of the compensation paid by the oil company.

In 1987, an estimated $4.0 million was paid by oil companies to landowners in the form of first-year bonuses ($0.7 million) and annual rental fees ($3.3 million).

Following proclamation of The Surface Rights Act on August 9, 1984, disputes relating to right-of-entry are referred to the Surface Rights Board. The Board's principal function is to arbitrate disputes between the petroleum industry and landowners regarding use of land for exploration, development and related operations and to determine what compensation should be paid to the landowner.

The Minister of Municipal Affairs is responsible for the administration of The Surface Rights Act. The Board's office is located in Winnipeg.

Waskada Gas Plant

During 1987 the Waskada gas plant, now in its fourth year of production, operated at approximately 26% of capacity (capacity = 85 000 m^3/day) producing 4 419.0 m^3 of propane, butane and condensate, valued at $324,612. Compared with 1986, volumes in 1987 decreased by 19%. Of the total 4 419.0 m^3 produced, propane accounted for 67%, butane 25% and condensate 8%.

As of December 31, 1987, the majority of the dry processed gas from the plant was being injected for storage back into underground formations.

Manitoba Drilling Incentive Program (1979 - 1986)

The original "Manitoba Drilling Incentive Program" provided for reduced Crown oil royalty and freehold oil tax rates on oil produced from new wells. Wells drilled between January 1, 1979 and January 1, 1987, and producing from Crown mineral rights qualified for a special reduced royalty incentive rate which was 35% of the corresponding base royalty rate charged on "old oil".

New wells producing from freehold mineral rights were eligible for a corresponding incentive freehold oil tax rate under The Oil and Natural Gas Tax Act.

The reduced royalty and tax rates applied to production from a new oil well during its respective "incentive period".

The incentive period earned for wells producing from provincial Crown mineral rights was called a "royalty incentive period" (RIP) whereas wells producing from freehold mineral rights earned a "production incentive period" (PIP).

As of December 31, 1987, 206 of the 1,624 wells capable of producing oil in the Province were operating under an incentive period (21% under RIP and 79% under PIP).

The Manitoba Drilling Incentive program was instrumental in attracting oil companies to Manitoba over the past seven years.

It is estimated that since the program was implemented in 1979, the value of the incentive to industry has been in excess of $15.0 million.

The Drilling Incentive Program expired on December 31, 1986.

Manitoba Drilling Incentive Program (1987 - 1991)

The "new" Manitoba Drilling Incentive Program announced March 2, 1987 (effective January 1, 1987) replaces the previous program which expired on December 31, 1986. The new program provides greater incentives for drilling exploratory wells while also assisting development drilling.

With the new program, qualifying wells will be provided with a royalty/tax free "holiday volume". The amount of "holiday volume" varies in response to oil prices and is dependent on the well's location, depth, producing formation and qualifying credits from previous dry holes. This represents a significant improvement over the previous program which provided operators with reduced royalty/tax rates for a period of time dependent only on well depth.

Each new oil well drilled in Manitoba after January 1, 1987, and prior to January 1, 1992, can earn a "holiday volume" of oil up to a maximum of 10 000 m^3 or 5 years of producion, whichever occurs first.

The program, has been generally successful despite the collapse of crude oil prices.

The province managed to maintain drilling activity in 1987 at a respectable level of 107 wells.

Enhanced Oil Recovery Incentive Program

The new Enhanced Oil Recovery Incentive Program (also announced March 2, 1987) is designed to maximize oil recovery by encouraging enhanced oil recovery (EOR) projects.

The program, the first of its kind in Manitoba, works in the following manner: wells in new or enlarged enhanced oil recovery projects, approved after January 1, 1987, and fully implemented prior to Janaury 1, 1992, are eligible for an incentive period of up to 60 months. During this time, operators benefit from reduced Crown royalty and tax rates on production from the projects.

During 1987, two of the three waterflood projects implemented qualified for incentives under the EOR incentive program.

Oil Reserves

From 1973 to 1980, remaining established oil reserves in Manitoba declined at a rate of approximately 5% per year due to production and lack of new discoveries.

This trend began to reverse in 1980 as new discoveries were made in the Kirkella area. New discoveries in the Waskada area in 1981 further arrested the decline and as a result of additional development in the area in 1982 and 1983 reserves increased. This increase in the Province's remaining established reserves followed more than 16 years of decline.

As of December 31, 1987, the province's total remaining established crude oil reserves are expected to decrease from 1986's total of 8.45 million m^3 (53 million barrels) (the 1987 reserve figure will be available in the 1988 Oil Activity Review). The decrease can be attributed mainly to production and the drop in drilling activity throughout the year as a result of the crude oil price collapse and reduced company cash flow.

CRUDE OIL RESERVES IN MANITOBA

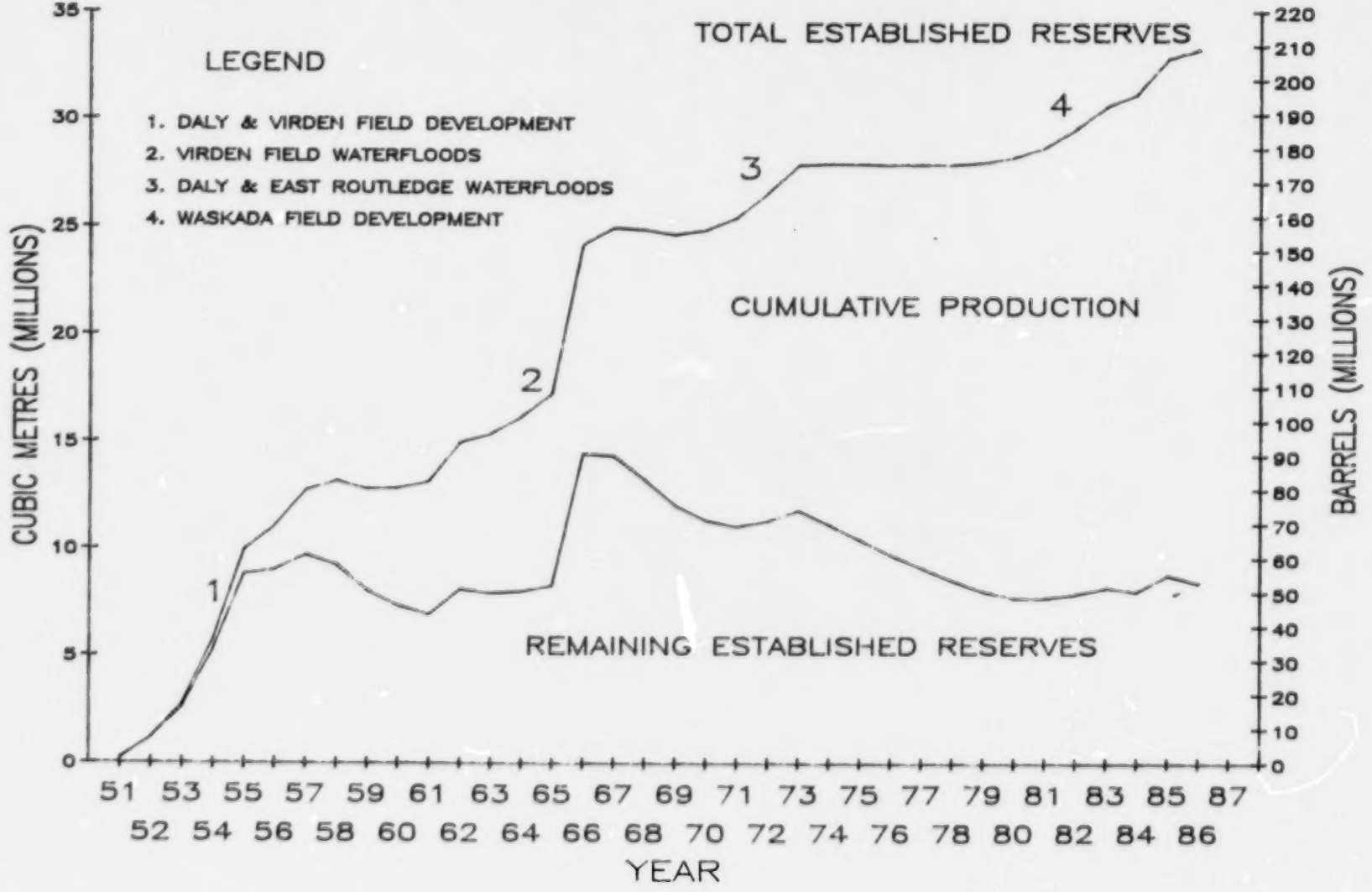
1973-1987

YEAR	PRODUCTION (m^3)	ESTABLISHED RESERVE ADDITIONS (m^3)	REMAINING ESTABLISHED RESERVES (m^3)	YEARS TO DEPLETION*
1973	807 882	Nil	11 798 000	14.60
1974	754 667	15 000	11 059 000	14.65
1975	701 459	4 000	10 362 000	14.77
1976	633 322	7 000	9 735 000	15.37
1977	630 466	15 000	9 120 000	14.46
1978	598 354	22 000	8 543 000	14.28
1979	583 377	24 000	7 984 000	13.64
1980	563 482	314 000	7 735 000	13.73
1981	542 695	544 000	7 736 000	14.25
1982	582 322	733 000	7 927 000	13.60
1983	736 934	954 000	8 154 000	11.06
1984	793 284	663 000	8 024 000	10.11
1985	820 729	1 628 000	8 831 000	10.76
1986	823 322	439 000	8 447 000	10.26
1987	781 806	**	**	**

* Remaining Established Reserves ÷ Annual Production

** 1987 figures will be included in the 1988 Oil Activity Review

MANITOBA ESTABLISHED OIL RESERVES (HISTORY)


LEGEND
1. DALY & VIRDEN FIELD DEVELOPMENT
2. VIRDEN FIELD WATERFLOODS
3. DALY & EAST ROUTLEDGE WATERFLOODS
4. WASKADA FIELD DEVELOPMENT
TOTAL ESTABLISHED RESERVES
CUMULATIVE PRODUCTION
REMAINING ESTABLISHED RESERVES
1
2
3
4
CUBIC METRES (MILLIONS)
BARRELS (MILLIONS)
0 5 10 15 20 25 30 35
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220
51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87
YEAR

Petroleum Industry Employment

The precipitous fall and slow recovery in crude oil prices not only affected activity levels and revenues but also employment levels in the industry.

In 1987 direct industry employment decreased slightly to 305 person years, a 2% decrease from 1986 levels. Of this total, approximately 65 person years were attributed to new geophysical and drilling activity, while the remaining 240 person years were associated with ongoing operation and maintenance functions of existing petroleum related facilities.

In addition to direct employment, there are indirect jobs created as a result of petroleum industry activity. For every 10 direct jobs created by the petroleum industry in 1987, there were between 10-15 indirect jobs created. This resulted in another 300-450 person years of indirect employment.

Industry Expenditures

As a result of the downturn in oil patch activity in Manitoba during 1987, it is estimated that industry spent $82 million in the province compared with $86 million in 1986.

The total expenditures can be broken down into seven categories: exploration, development, land, producing facilities, producing costs, royalties and other.

The exploration component which includes, exploratory drilling costs, geophysical and geological work amounted to approximately $9.1 million.

Development costs include development drilling costs which accounted for approximately $12.9 million.

Land costs were based on freehold and Crown mineral and surface rights acquisition costs, fees and rentals. The total estimated cost of this component amounted to $3.9 million.

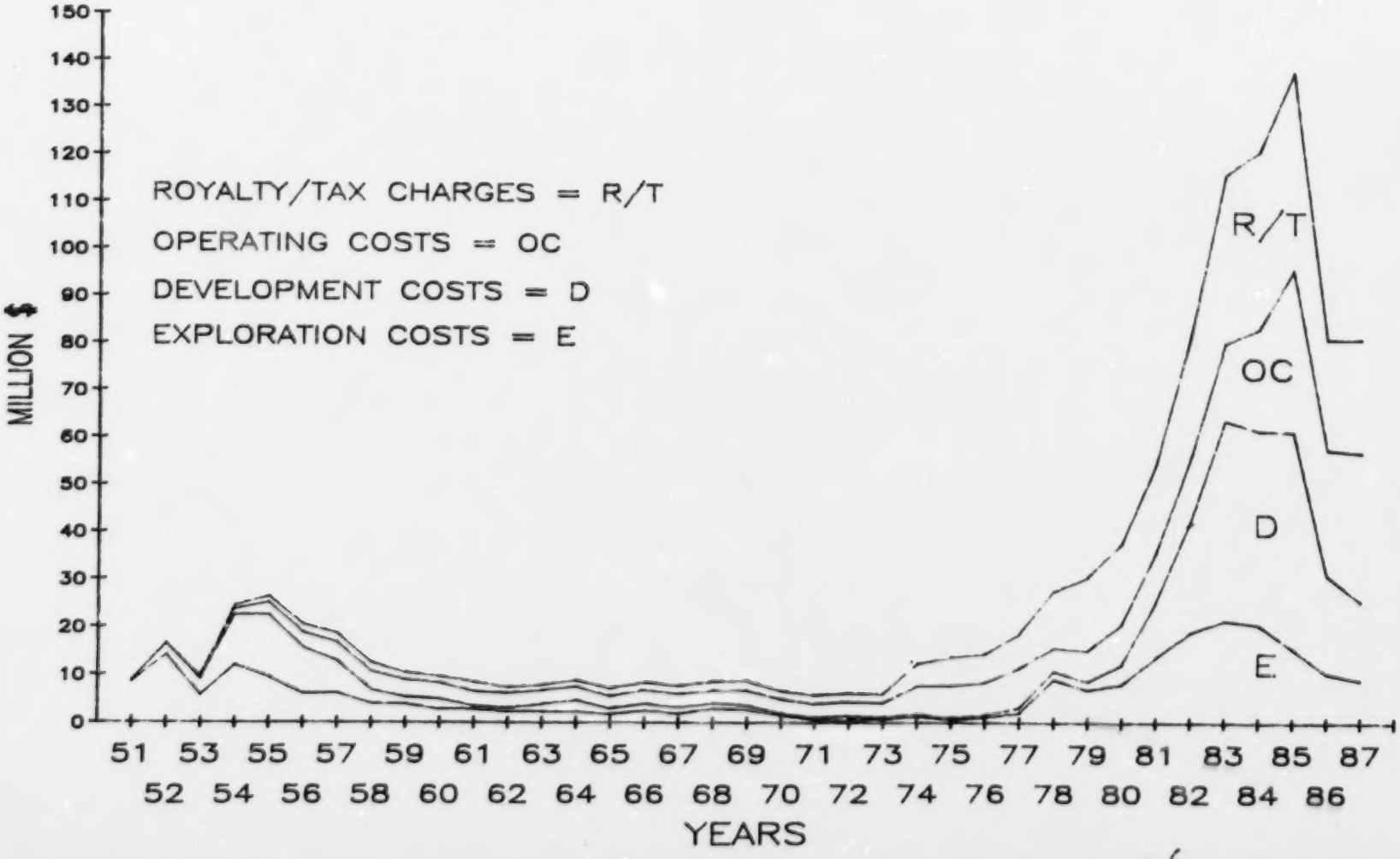
Producing facilities included mainly capital costs associated with field equipment and enhanced recovery schemes. Approximately $5.7 million were spent on this component.

Production costs were valued at $26.1 million and include well operating, flow line and gas plant costs.

Royalties included freehold production royalties, Crown production royalties and freehold oil taxes. It was estimated that this component was valued at $21.8 million for 1987.

Other costs in total industry expenditure include municipal taxes, right-of-way acquisitions and miscellaneous expenditures totalling approximately $2.3 million.

PETROLEUM INDUSTRY EXPENDITURES IN MANITOBA 1951 - 1987 (MILLIONS $)



1988 Forecast

Activity in Manitoba's oil patch should improve slightly over 1987's performance.

Crown land sales are expected to generate between $0.6 - 1.0 million compared with 1987's figure of $0.59 million.

Geophysical activity could surpass 1987's level of 13 programs (1 008 km) for the following reasons. Companies that were planning any programs within the next 1-2 years will likely take advantage of the Canadian Exploration and Development Incentive Program (CEDIP) before the incentive is reduced in October, 1988.

In addition, promising exploration and development activity in eastern Saskatchewan could spill over into Manitoba (in the Pierson and Daly/Birdtail areas) if these plays turn out successful results. It is also possible some Winnipegosis Formation evaluation may occur depending on continued success in the neighboring Saskatchewan Tableland play.

Based on the strong drilling performance so far in the first quarter of 1988, it is forecast that 100 - 125 wells will be drilled in Manitoba in 1988 as companies take advantage of higher CEDIP incentives prior to October. Much of the drilling activity will likely continue to occur in the Daly, South Pierson, Regent and south Virden areas.

However, with only a slight improvement in drilling activity over 1987, crude oil production is expected to continue dropping. It is expected that production in 1988 will decrease to 750 000 m^3 or 4% compared with 781 806 m^3 in 1987.

Crude oil prices will continue to narrowly fluctuate in their present range but should average the year out at $145.00/$m^3$ (up slightly from 1987's average of $143.00/$m^3$).

Despite a projected decrease in crude oil production, the value of crude oil produced should remain unchanged from 1987's total of $110 million. Associated with production value are direct revenues to the Crown in the form of Crown royalties and oil taxes. These are also expected to remain relatively unchanged for 1987 and should range in the $2.5 - 3.0 million range for Crown royalties and $8.5 - 9.0 million for freehold oil taxes.

MANITOBA OIL FIELDS - 1987

	DALY	TILSTON	WASKADA	COULTER	LULU LAKE	VIRDEN	WHITE-WATER	PIERSON	KIRKELLA	SOUTH PIERSON	SOURIS HARTNEY	OTHER AREAS	CONF. WELLS	TOTAL
DISCOVERY YEAR	1951	1952	1952	1952	1953	1953	1953	1954	1957	1961	1962	N/A	N/A	N/A
AVG. DEPTH TO PRODUCING FORMATION (m)	769	945	923	970	1 000	630	785	1 003	738	990	655	N/A	N/A	N/A
PRODUCING FORMATION	L/B	MC	MC/LAm	MC/LAm	L	L	L	MC	L	MC/LAm	L	LAm MC/L	N/A	N/A
WELL SPACING (ha)	16	16	16	16	16	16	16	16	16	16	32	16	N/A	N/A
WELLS CAPABLE OF OIL PROD. (DEC. 1987)	412	21	414	9	7	583	30	55	37	20	9	18	9	1 624
OIL WELLS PROD. (DEC. 1987)	354	15	369	4	7	543	28	46	29	13	7	12	7	1 434
1987 OIL PROD. (m^3)	160 064	6 898	219 107	1 007	3 902	318 194	19 267	21 646	8 574	12 247	2 480	6 843	1 579	781 806
CUM. OIL PROD. (DEC. 31/87) (m^3)	4 157 557	111 039	1 471 558	10 242	53 805	18 873 361	148 052	349 117	233 565	44 535	135 270	40 296	1 579	25 629 976
REMAINING ESTABLISHED RESERVES(m^3)* (DEC. 31, 1986) (000's m^3)	1 079.1	41.6	2 235.8	.8	10.4	4 564.1	153.6	212.8	41.1	33.4	32.9	9.4	32.0	8 447

L = Lodgepole
LAm = Lower Amaranth
MC = Mission Canyon
B = Bakken

*1987 reserve figures not available at press time.

GEOLOGICAL FORMATIONS IN MANITOBA

AGE Millions of years before present	ERA	PERIOD	EPOCH	FORMATION	MEMBER	MAX. THICK (m)	BASIC LITHOLOGY
	CENOZOIC	QUATERNARY	RECENT				TOP SOIL, DUNE SANDS
			PLEISTOCENE	GLACIAL DRIFT		140	CLAY, SAND, GRAVEL, BOULDERS, PEAT
		TERTIARY	PLIOCENE				
			MIOCENE				
			OLIGOCENE				
50			EOCENE				
			PALEOCENE	TURTLE MTN.	PEACE GARDEN	120	SHALE, CLAY AND SAND, LIGNITE BEDS LOCATED ONLY IN TURTLE MOUNTAIN
65					GOODLANDS		
	MESOZOIC	CRETACEOUS	UPPER CRETACEOUS	BOISSEVAIN		30	SAND AND SANDSTONE, GREENISH GREY, LOCATED ONLY IN TURTLE MOUNTAIN
				RIDING MTN.	[illegible]	310	GREYSHALES—NON-CALC, LOCAL IRONSTONE BENTONITE NEAR BASE, GAS FOUND
				VERMILION RIVER	PEMBINA	155	SHALE, DARK GREY CARBONACEOUS NON-CAL, BENTONITE BANDS
					BOYNE		SHALE, GREY SPECKLED CALC, BENTONITIC SLIGHTLY PETROLIFEROUS
					MORDEN		SHALE, DARK GREY NON-CALC, CONCRETIONS, LOCAL ANO SILT
				FAVEL		40	GREY SHALE WITH HEAVY CALCAREOUS SPECKS BANDS LIMESTONE AND BENTONITE
100				ASHVILLE		115	SHALE, DARK GREY, NON-CALC, SILTY
			LOWER CRETACEOUS	ASHVILLE SAND			SAND ZONE: 27m P.G. QTZ. S. OR SS
				SWAN RIVER		75	SANDSTONE AND SAND, QTZ, PYRITIC SHALE—GREY, NON-CALC
150		JURASSIC	UPPER JURASSIC	WASKADA		200	BANDED-GREEN SHALE AND CALC. SANDSTONE
				MELITA			BANDS OF LIMESTONE, VARI-COLORED SHALE
			MIDDLE JURASSIC	RESTON		45	LIMESTONE, BUFF, AND SHALES, GREY
				AMARANTH	UPPER EVAPORITE	45	WHITE ANHYDRITE AND/OR GYPSUM AND BANDED DOLOMITE AND SHALE
200					LOWER RED BEDS	40	RED SHALE TO SILTSTONE DOLOMITIC **OIL PRODUCING**
		TRIASSIC					
	PALEOZOIC	PERMIAM	(?)	ST. MARTIN COMPLEX		300	CARBONATE BRECCIA, TRACHYANDESITE (CRYPTO-EXPLOSION STRUCTURE)
250		PENNSYLVANIAN					
300		MISSISSIPPIAN	MADISON GROUP	CHARLES		20	MASSIVE ANHYDRITE AND DOLOMITE
				MISSION CANYON	MC-3	120	LIMESTONE—LIGHT BUFF OOLITIC FOSS FRAG, CHERTY BANDS SHALE AND ANHYDRITE
					MC-2		**OIL PRODUCING**
					MC-1		
				LODGEPOLE	FLOSSIE LAKE	188	LIMESTONE & ARG. LIMESTONE LIGHT BROWN AND REDDISH MOTTLED ZONES OF SHALEY, OOLITIC, CRINOIDAL & CHERTY
					WHITEWATER LAKE		
					VIRDEN		**OIL PRODUCING**
					[illegible]		
350				BAKKEN	UPPER	20	2 BLACK SHALE ZONES, SEPARATED BY SILTSTONE **OIL PRODUCING**
					MIDDLE		
					LOWER		
		DEVONIAN	SASK. GROUP (?)	LYLETON		35	RED SILTSTONE AND SHALE DOLOMITIC
				NISKU		40	LIMESTONE & DOLOMITE, YELLOW-GREY FOSS, POROUS, SOME ANHYD.
				DUPEROW		170	LIMESTONE & DOLOMITE, ARG. & ANHYDRITIC IN PLACES
			MAN. GROUP	SOURIS RIVER 1 ST RED		120	CYCLICAL SHALE, LIMESTONE & DOLOMITE ANHYDRITE
				DAWSON BAY 2 ND RED		65	LIMESTONE & DOLOMITE, POROUS, ANHYDRITE—LOCAL SHALE RED & GREEN
			ELK POINT G.	PRAIRIE EVAP		120	SALT POTASH & ANHYDRITE, DOLOMITE INTER—BEDDED
				WINNIPEGOSIS		75	DOLOMITE, LIGHT YELLOWISH BROWN REEFY
400				ELM POINT			LIMESTONE—FOSS, HIGH CALCIUM
				ASHERN		12	DOLOMITE AND SHALE—BRICK RED
		SILURIAN		INTERLAKE GROUP		135	DOLOMITE YELLOWISH—ORANGE TO GREYISH—YELLOW FOSS, SILTY ZONES
		ORDOVICIAN		STONEWALL		15	DOLOSTONE, GREYISH YELLOW, BEDDED
				STONY MOUNTAIN	WILLIAMS	30	DOLOMITE—YELLOWISH—GREY SHALEY
					GUNTON		DOLOMITE—DUSKY—YELLOW FOSS
					PENITENTIARY		
					GUNN	20	SHALE RED—GREEN FOSS, LIMESTONE BANDS
450				RED RIVER	FORT GARRY	170	DOLOMITIC LIMESTONE, MOTTLED AND DOLOMITE
					SELKIRK		
					CATHEAD		
					DOG HEAD		
500				WINNIPEG	UPPER UNIT	60	SHALE, GREEN, WAXY, SANDSTONE INTERBEDDED
					SANDSTONE		SAND, SANDSTONE, QUARTZOSE
550		CAMBRIAN		DEADWOOD		60	SAND, BLACK TO GREEN—GREY WAXY, GLAUCONITIC SILTSTONE & SHALE, GREEN—GREY TO BLACK, VERY EDGE OF S.W. MANITOBA ONLY
	PRECAMBRIAN						ACID & BASIC CRYSTALLINES & METAMORPHICS